

JPRS-TTP-92-006  
28 APRIL 1992



**FOREIGN  
BROADCAST  
INFORMATION  
SERVICE**

# ***JPRS Report***

## **Telecommunications**

19981208 161

REPRODUCED BY  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL TECHNICAL INFORMATION SERVICE  
SPRINGFIELD, VA. 22161

**DTIC QUALITY INSPECTED 3**

# Telecommunications

JPRS-TTP-92-006

## CONTENTS

28 April 1992

### INTERNATIONAL AFFAIRS

Vietnam Radio on U.S. Lifting Telecommunications Embargo [Hanoi Radio] .....	1
German Consortium To Equip CIS With Satellite Systems [Bonn DIE WELT 7 Feb] .....	1
ESA's ERS-1 Satellite Becomes Operational [Rome AIR PRESS 5 Feb] .....	2
Fiber-Optic Cable To Link Japan, Korea, USSR [Paris LA LETTRE DE LA FIBRE OPTIQUE 9 Dec] .....	2
Fiber-Optic Cable To Link Denmark, USSR [Paris LA LETTRE DE LA FIBRE OPTIQUE 9 Dec] .....	3
Fiber-Optic Cable To Link Finland, Estonia [Helsinki HUFVUDSTADSBLADET 1 Apr] .....	3
Fiber-Optic Cable Links Portugal to Africa [Lisbon DIARIO DE NOTICIAS 25 Mar] .....	3

### SUB-SAHARAN AFRICA

#### GHANA

Accra-Kumasi Railway Communications Updated [PEOPLE'S DAILY GRAPHIC 28 Feb] .....	5
42 Rural District Telephone Centers Planned [PEOPLE'S DAILY GRAPHIC 26 Feb] .....	5

### EAST ASIA

#### LAOS

Paging System Funding, Operation Described [PASASON 24 Dec] .....	6
---	---

### EAST EUROPE

#### HUNGARY

Austria's Schrack To Rebuild MAV Communications Network [MAGYAR ELEKTRONIKA Feb] .....	7
Hungaro DigiTel's Operating VSAT System [MAGYAR ELEKTRONIKA Jan] .....	7
Csucstechnika CEO on Developments, Strategy [MAGYAR ELEKTRONIKA Jan] .....	9
KFKI Presents Computer Network System Solutions [MAGYAR ELEKTRONIKA Jan] .....	9
French Paper on Conflict Over Hungarian T.V. [Paris LE MONDE RADIO TELEVISION 23-29 Mar] .....	10
Details on Development of Cable T.V. [Paris LE MONDE RADIO TELEVISION 23-29 Mar] .....	12

#### POLAND

Fiber-Optic Telecommunications Installation [GLOB 24, 20 Feb] .....	12
Media Official Interviewed on Broadcasting [RZECZPOSPOLITA 3 Apr] .....	14
Radio Broadcasting Law Issues Reviewed [GLOB 24, 14 Jan] .....	16

### LATIN AMERICA

#### BRAZIL

Santa Catarina To Install Fiber-Optic Cables [O ESTADO DE SAO PAULO 6 Apr] .....	18
--	----

## NEAR EAST & SOUTH ASIA

### REGIONAL AFFAIRS

India, Kuwait To Cooperate in Communications [Madras INDIAN EXPRESS 21 Feb] .....	19
Iranian Telecommunications Delegation Visits Pakistan [Peshawar THE FRONTIER POST 26 Feb] .....	19

### EGYPT

RTU, Arabsat Sign Agreement on Space Channel [Cairo Radio] .....	20
6th Television Channel To Begin in Tanta [MENA] .....	20

### INDIA

Aims in Remote Sensing Technology Cited [INDIAN EXPRESS 3 Mar] .....	20
Telecom Sector Fails To Fulfill Targets [THE TIMES OF INDIA 29 Feb] .....	21

### IRAN

Semnan Voice and Vision Gets Satellite Dish [SALAM 11 Mar] .....	21
2 Communications Offices Operational in Fars [SALAM 1 Mar] .....	21
Digital Telephone Center Operational in Hamadan [SALAM 29 Feb] .....	22
Digital Telephone Centers Inaugurated in Shiraz [ETTELA'AT 16 Feb] .....	22
3 Telephone Centers Inaugurated in Tabriz [ETTELA'AT 12 Feb] .....	23
Thousands of Telephone Numbers To Be Assigned [SALAM 23 Feb] .....	23
First Satellite Receiver in Semnan Operational [JOMHURI-YE ESLAMI 16 Mar] .....	24

### IRAQ

Rebel Radio Announces New Kurdish Station [Clandestine Radio] .....	24
---	----

### PAKISTAN

Computer-Based Electronic Network Established [DAWN 4 Mar] .....	24
--	----

## WEST EUROPE

### REGIONAL AFFAIRS

JESSI HDTV Development Program Launched [Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN 18 Feb] .....	25
German, British Cooperate on Fiber-Optic Systems [Stuttgart LASER & OPTOELEKTRONIK Feb] .....	25
European Operators Embark on Videophone Project [Chichester INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE 24 Feb] .....	25

### CYPRUS

House Passes Law on Operating TV Stations [Nicosia Radio] .....	26
---	----

### FRANCE

Thomson's HDTV Sacrifices Quality for 16/9 Format [LE MONDE 19 Feb] .....	26
HDTV Transmission Standard To Be Selected [LE MONDE 28 Feb] .....	26
Telecommunications Firms Face Market Changes [L'USINE NOUVELLE 27 Feb] .....	27
France Telecom, DBP To Compete With Syncordia [LIBERATION 12 Mar] .....	29

### GERMANY

Philips Attempts To Market HDTV to Industry [HANDELSBLATT 5 Mar] .....	30
--	----

## ITALY

SIP Reports 480 Billion Lire Profits [LA REPUBBLICA 31 Mar] .....	30
ENI, SIP Vie for Cellular Phone Concession [LA REPUBBLICA 18 Mar] .....	32
Philips Italia Presents HD-MAC Laser Disc System [ITALIA OGGI 31 Jan] .....	33

## NETHERLANDS

Government Subsidizes 15 Communications Projects [POLYTECHNISCH WEEKBLAD 16 Jan] .....	33
---	----

## NORWAY

Turkish Armed Forces Consider Alcatel Equipment [AFTENPOSTEN 1 Apr] .....	34
---	----

## PORTUGAL

Details on Future PO-SAT1 Satellite Launch [O JORNAL 27 Mar] .....	34
--	----

## TURKEY

TRT Eurasian Television Telecasts via Intelsat VF-7 [GUNAYDIN 9 Apr] .....	35
TV Link With Turkic States Detailed [TURKISH DAILY NEWS 8 Apr] .....	36

## UNITED KINGDOM

Research Center Develops Small Satellites [THE DAILY TELEGRAPH 21 Mar] .....	37
--	----

### **Vietnam Radio on U.S. Lifting Telecommunications Embargo**

*BK1704035692 Hanoi Voice of Vietnam in English  
1000 GMT 15 Apr 92*

[Station commentary]

[Text] The U.S. on Monday said it would modify its economic embargo against Vietnam to allow the establishment of telecommunications links. In her written statement, the spokeswoman of the State Department said the U.S. decision to lift the telecommunications ban is in keeping with the established policy of a step-by-step process of normalization of relations with Vietnam.

Late last year the U.S. Administration removed the restrictions toward Vietnamese diplomats in New York, allowing them to move within only 25 miles from the city. Five months later the U.S. now took another step by lifting the ban on telecommunications with Vietnam.

In the process of normalization of the U.S.-Vietnamese relations, the U.S. takes short steps while Vietnam has always been prepared to respond to U.S. requirements in solving the MIA issue. Moreover, whatever Vietnam did is not linked with any political condition. Over the past 15 years Vietnam handed over to the U.S. some 127 sets of American remains. Assistant to the U.S. Secretary of State Solomon, in an interview granted to Radio VOA on 7 April, said he was pleased at Vietnam's deed. The spokeswoman for the State Department lately also confirmed Vietnam's efforts in solving the MIA issue.

Of course Vietnam remains active in solving this humanitarian issue if the U.S. does not take these steps, for this is a question of human feelings. The U.S. decision to lift the ban on telecommunications with Vietnam responds to the aspirations of the very American public, especially the American Telephone and Telegraph Company.

Mr. Solomon also disclosed that at present the U.S. business circles is expecting the normalization of the U.S.-Vietnamese relations because the trade embargo does no good to either side.

### **German Consortium To Equip CIS With Satellite Systems**

*92MI0262Z Bonn DIE WELT in German 7 Feb 92 p 25*

[Article by D. Thierbach: "Connection Only by Satellite—Pressing Need for New Communications Facilities in the Former Soviet Union"]

[Text] The telecommunications infrastructure is simply disastrous: About 200,000 locations in the former Soviet Union are not yet connected up to a telecommunications network. Existing switching systems employ 60-year-old technology, which gives extremely poor-quality transmission and which cannot even be extended using modern technology. Existing subnetworks are too inadequate to form a viable network structure and guarantee an efficient telecommunications service. Little more

than a start has been made on a computer data transmission system. Officially there are 1,500 connections, mainly in urban agglomerations, while there are no international links at all. A short-term improvement can only be achieved with a satellite-based network. A German-Russian team has thus devised "Romantis," a satellite communications network that can be rapidly installed, to meet demand at least in part. The network consists of three space satellites, plus a reserve satellite on earth, with ground stations.

According to western standards, the CIS needs 150 million telephone connections and 10,000 voice lines to other countries. By the year 2000, Romantis is scheduled to provide at least 60 million connections and to meet at least part of the demand for television channels.

"Its high flexibility means that channel capacity can be geared to regional and international traffic requirements," said Reinhard Schnabel of ANT Communications recently in Hildesheim. His firm, DASA [German Aerospace Corporation], and DBP [Deutsche Bundespost] Telecom make up the "Dante" consortium. "The network is configured in such a way that certain areas are linked together and communicate with other areas of the network sections via a ground station. Smaller network units can also be covered directly by satellite." The three orbiting switching exchanges are in different orbital positions and are equipped with adjustable antennae.

Each satellite illuminates a specific area to ensure that the whole territory of the former Soviet Union is covered. "In view of the political developments, it remains to be seen whether all three satellites will enter service at the same time or whether the system is to be implemented gradually." The adjustable antennae, combined with the correct orbital positions, means that, in addition to its primary purpose, this "flexible system" can also be used for communications with Europe, the United States, South America, and Africa.

To make the most of the limited frequencies available, and to provide as efficient a service as possible, each satellite will use the same frequencies in different beams. All four adjustable antennae are designed both to receive and to transmit, using the same system parameters as in successful satellites like Astra, Eutelsat, or the DFS [German Telecommunications Satellite System] Kopernikus. The telecommunications payload consists of 24 active transceivers, each with a 72-megahertz band width, providing an overall transmission capacity of 36,000 speech channels or 48 television channels.

"In western-style traffic conditions, a satellite could handle more than 1 million telephone connections," said Reinhard Schnabel. A 2.5-tonne satellite is designed for a service life of at least 12 years. If all goes according to plan, the first Romantis satellite will be launched in 1995.

To take account of the different traffic density in the various regions, the communications network will consist of configurations that will either distribute signals on earth in a star-shaped pattern or have its ground stations interconnected, as in a grid. Five types of station models have been developed for use in the Romantis system, with a view toward optimizing the overall network. Ground antenna diameters range from 0.7 to four meters. Stations with transmission facilities have amplifier output powers of between five and 240 watts.

Ground stations with 0.7- to 1.2-meter antenna diameters are mainly used for individual television reception and for one-way thin route traffic [Verkommunication], stations with 1.5-meter antenna host cable head stations that relay the signals. The largest station in the network, with a four-meter antenna and a 240-watt transmitting power, will be used for TV uplink and cable head stations for many channels. This station will be equipped with transmission and receiving facilities.

"Presentations and meetings with the national authorities concerned give grounds for hoping that the installation stage may begin before the end of 1992," said Reinhard Schnabel. He put the overall costs for the initial development stage of Romantis at between 2 and 7 billion German marks. "If fee income reflects western levels, we estimate that it will have paid for itself in seven years."

#### **ESA's ERS-1 Satellite Becomes Operational**

*92MI0274Z Rome AIR PRESS in Italian 5 Feb 92 p 228*

[Text] Six months after its launch, the ESA's [European Space Agency] first remote sensing satellite, the ERS-1 [European Remote Sensing Satellite], has been declared operational. The announcement was made by the ESA at the end of the testing phase involving instrument calibration tests, sensor calibration, and confirmation of satellite data. The results of these tests were in compliance with, if not superior to, the values set. These activities began early last August (the launch took place on 16 July and involved Alenia Spazio and other Italian industries) and ended in mid-December. The activities involved many earth infrastructures (laser tracking stations, transponders, etc.), and instruments aboard the spacecraft, throughout the world and with the support of many European and non-European scientists. An enormous quantity of data was processed during this period, including the LBR [Low Bit Rate], and SAR [Synthetic Aperture Radar] data collected and processed by various ESA institutes and national installations in ESA and non-ESA member countries.

The various activities during this phase included the purely experimental operations that took place on the satellite in the "Roll Tilt Mode" on 11-12 December 1991. The entire platform was made to rotate 10° to 15° on its rolling axis, thus allowing the SAR sensor to function at an angle of 35° instead of the 23° during the

nominal operational mode. The results were so interesting that the first week of April will be entirely dedicated to a second cycle of activities in the "Roll Tilt Mode" before starting the "repeat cycle orbit" (a 35-day period) that will last until the end of 1993. Maneuvers in orbit to put the spacecraft into another repeat cycle orbit (a three-day period), for ice tests began on 13 December 1991. This "ice orbit" was reached on 28 December and will be maintained until next March.

SAR data is transmitted to 16 earth stations, six in Europe and 10 in other parts of the world. The digital and photographic documentation taken from the data has demonstrated the exceptional performance of this instrument and the congruence of algorithms to data processing requirements. The processing chains at the ESA's central station, its station in Norway, and those in the United States and Canada have been declared operational and authorized to distribute material to the PI ([Principal Investigators]—scientists chosen by the ESA through an "announcement of opportunity process") but also to any other interested party. This data is regularly filed at the PAF's (Processing and Archiving Facilities) operating in various ESA countries: I-PAF in Matera for Italy, D-PAF in Oberpfaffenhofen (Munich), and G-PAF in Farnborough. The distribution of the basic off-line products generated by these infrastructures has already been authorized. The future distribution of thematic and precision products is still pending authorization.

Global LBR data is now routinely transmitted to ESA stations for real-time processing. It is then transferred through the sorting center in Rome from the ESA's ESRIN [European Space Research Institute] facility in Frascati, Italy for inputting into the world meteorological network and ESRIN's earthnet network for the user distribution service. They are then sent to the French PAF (F-PAF) in Brest. Upon request, the needs of users may even be incorporated into mission programs to meet the user requests received by Earthnet.

The worldwide commercial distribution of ERS-1 data and derived products is handled through the ERSC [Eurimage, Radarsat International, and Spot Image Consortium]. Negotiations have now been concluded and the contract has been sent to ERSC for signature. Meanwhile, in Frascati, ESRIN has already started to collect user requests and satisfy clients' needs. For information on the type of products, their availability, and prices, contact the help desk at 06-94180600.

#### **Fiber-Optic Cable To Link Japan, Korea, USSR**

*92AN0148Z Paris LA LETTRE DE LA FIBRE OPTIQUE in French 9 Dec 91 p 1*

[Unattributed article: "A Feasibility Study for 700 Km of Submarine Fiber-Optic Cable Between Japan, Korea, and the USSR"]

[Text] The Danish companies Telecom A/S and GN Store Nord have initiated a technical and financial

research project with Russia, Japan, and South Korea with a view toward a fiber optic submarine telecommunications cable.

Measuring 700 km in length, the cable would link Vladivostok (western Russia) to Hamada (southwestern Japan), with a branch to Seoul, explained the two Danish companies in a joint communique.

The research project was signed 22 November by Telecom; GN Store Nord; the Russian Ministry of Telecommunications, Sovtelecom A/O; Korea Telecom; and Kokusai Denshin Denwa Company Ltd (the largest Japanese telecommunications operator). The new cable, for which the feasibility study will be concluded in mid-1992, is destined to replace the existing analog cable link (JASC) between Vladivostok/Nkhodka and Japan.

The one now is 20 years old and its capacities are insufficient today.

The existing cable, owned by Kokusai Denshin Denwa and Store Nord, will continue to be used, for the time being, by the two groups.

#### **Fiber-Optic Cable To Link Denmark, USSR**

92AN0149A Paris LA LETTRE DE LA FIBRE OPTIQUE in French 9 Dec 91 p 1

[Text] Worldwide, 25 telecommunications companies have decided to invest in a Danish project for a submarine fiber-optic cable with a capacity of 15,000 lines for telephone, telex, data, and video between Denmark and the USSR. This was announced by Telecom (communications) and GN Store Nord (cables), the initiators and leaders of this project, which will cost half a billion kronor (\$78 million). The two companies have already begun laying the cable that will connect Copenhagen to Saint Petersburg via the Baltic Sea by January 1993.

#### **Fiber-Optic Cable To Link Finland, Estonia**

92WT0151A Helsinki HUFVUDSTADSBLADET in Swedish 1 Apr 92 p 7

[Finnish News Agency article: "New Telecommunications Link to Sweden"]

[Text] Finnish Tele and Swedish Televerket have reached an agreement with Nokia Kabel concerning the delivery of an optic cable to be installed on the sea floor linking Finland and Sweden. The new cable link which will be completed by the end of the summer of 1993, will become the primary channel for telecommunications between Finland and the outside world. The cable will be used to transfer telephone calls, data and, among other things, TV transmissions.

Tele and Nokia Kabel also signed an agreement concerning the delivery of an optic cable which will connect Finland and Estonia. The total value of the agreements amounts to 30 million markkaa.

The cable connecting Finland and Sweden will be one of the first high-capacity underwater cables in the world. The cable will have six pairs of fibers dedicated to international communications, which means that 184,320 simultaneous telephone connections can be established using today's technology.

Currently almost all telecommunications directed to the West are utilizing radio links on the Aland Islands. The underwater cable will run from Turku to Mariehamn, and then to Norrtalje.

Tele and Televerket have already agreed on the next optic underwater cable, which is to be finished during the fall of 1994.

The Finnish-Estonian cable link will be laid between Helsinki and Tallinn. The cable will be laid next fall. This will be the first international optic cable to the Baltic countries and the former USSR.

Initially this cable will be equipped with a transmission system which supports a maximum of 960 telephone lines. This capacity can, however, be increased if the need arises.

The cables on order will allow Estonia, for one, access to the international cable network via Finland and Sweden. A spokesperson for Tele told us that the cables will eventually be an essential part of an international cable network surrounding the Baltic Sea.

#### **Fiber-Optic Cable Links Portugal to Africa**

92WT0146A Lisbon DIARIO DE NOTICIAS in Portuguese 25 Mar 92 p 19

[Unattributed article: "Marconi Links Portugal to Africa via New Fiber-Optic Cable"]

[Text] Portugal is strengthening its position in the communications field. In Sesimbra yesterday, Marconi linked up the submarine fiber-optic cable connecting Europe and Africa, making digital telecommunications of high quality, capacity, and reliability possible with Europe, Madeira, and North Africa. The system will utilize terminal stations in Casablanca, Funchal, Sesimbra, and St. Hilaire-en-Riez, France.

This is the first submarine fiber-optic cable to be linked to a Portuguese station. The experimental links in this project, which will not be completed until the end of June, will provide a capacity of 16,000 simultaneous international calls. The cost is budgeted at about 6 million contos for Marconi, the principal investor responsible for 30 percent of the total. Participants in the undertaking include 22 enterprises in 18 countries, among them France, the United Kingdom, and Morocco, which will use the new cable for telecommunications purposes.

The operations connected with laying this fiber-optic cable are divided into two stages. The first, that in the northern sector, was completed yesterday with the

linking of Sesimbra to France, while the second, located in the southern sector and scheduled for completion in June, involves a branch line continuing to Funchal and Casablanca. This Eurafrikan system, designed for 25 years of use, also allows for hookups with other cables already installed to allow communications with other countries, such as South Africa.

The laying of the cable was done from a ship (there are several) built specifically for this activity, relying on the support of technical services with reference to satellites, while on the high seas, and land markers. In the deepest areas, the cable is laid on the bottom, but, on the continental shelves, it is buried, using a submarine plow,

in order to protect it from possible damage, resulting, for example, from trawling operations.

Meanwhile, other fiber-optic submarine cable systems are under construction. They include, for example, the SAT-2, which will link South Africa to Madeira and the Canary Islands and is scheduled for completion in February of 1993; the Columbus II, which, beginning in 1994, will link the southern part of Europe to South America; and the Tagid-2, which will link Portugal to the northern part of Europe in 1995. All of these systems will be linked to Portugal. This last system is making use of a new technology that increases the cable capacity to 120,000 simultaneous circuits.



## GHANA

### **Accra-Kumasi Railway Communications Updated**

92WT0147A Accra *PEOPLE'S DAILY GRAPHIC*  
in English 28 Feb 92 p 1

[Text] The rehabilitation of communications network at 35 railway stations on the Eastern rail line from Accra to Kumasi is underway.

It is part of a major rehabilitation programme being carried out by the Ghana Railway Corporation with a World Bank funding.

The project, which involves the replacement of modern signals systems including 27 stations on the Central rail line, is being undertaken by the All Afra Electric Company under the supervision of the IRSA Engineers of Italy.

According to Mr. Kwame Benni Bosompem, electrical engineer in charge of the communications installation team, all the obsolete overhead telephones and communication signals in the railways system are being replaced.

He said advanced and computerised traffic control systems, microwave solar-powered systems, relay racks and traffic threadens are being installed at the railway stations under the project begun last year.

The engineer said the replacement of the new systems would make it possible for easy and uninterrupted communications links between the railway stations.

Mr. Bosompem said the project may be completed in the end of this year, depending on the availability of materials.

### **42 Rural District Telephone Centers Planned**

92WT0147B Accra *PEOPLE'S DAILY GRAPHIC*  
in English 26 Feb 92 p 1

[Article by Ato Aidoo]

[Text] Forty-two district centres are to benefit from a 51-million US dollar rural telephony system for scattered subscribers under phase one of a telecommunication pilot project.

The government is providing 18 million dollars, while the remaining assistance comes from international donor agencies.

The centres include Enchi, Axim, Bolgatanga, Salaga, Damango, Bole, Walewale, Gambaga, Attebubu, Bereku, Dormaa-Ahenkro, Ejura, Konongo-Odumasi, Manpong-Ashanti, Ada Foah, Donkorkrom, Akyem Oda, Mpraeso, Denu, Kete-Krachi, Ho, Swedru, Dunkwa-On-Offin, among others.

Col. (rtd), Michael K. Gbagonah, Director-General of the Posts and Telecommunications (P & T) Corporation who announced this at the inauguration of a IRT 2000 rural telephony system at McCarthy Hill in Accra yesterday said the political evolution in the country laid emphasis on district assemblies interconnected to the national grid.

Col. Gbagonah said the project is geared towards the socio-economic advancement of all rural areas but lack of funds explains why some communities have to benefit first.

The P & T Director-General said the trade liberation policy gave leverage for entrepreneurs to take up certain responsibilities which overwhelmed the corporation adding that the new telephone system for scattered subscribers struck a remarkable advancement in the country's telecommunication network.

In his inaugural address, Commander P.M.G. Griffiths, Deputy Secretary for Transport and Communication, said the government would give the P & T the maximum support to make telephone available to many more rural communities.

He expressed satisfaction for the timeliness exhibited by "SEATEC," the engineers for the project and expressed the hope that the needed technical assistance would be offered by the company to sustain the equipment.

## LAOS

**Paging System Funding, Operation Described***92WT0095A Vientiane PASASON in Lao 24 Dec 91 p 2*

[Text] The radio paging system (pager) is very popular with customers. Comrade Phonsavan Khamphannolat, a marketing specialist of the Lao Asia-Pacific Electronics Company Limited said that: "Every day people have been calling the company constantly, and some visit the company personally to ask about using pagers. Since beginning this service a few months ago, the company has been able to sell more than 100 pagers and has set up branches to sell pagers in three to four locations in Vientiane. Each day our station receives and sends 60 to 70 paging signals."

A pager is a type of radio which does not need an antenna and is able to process various data clearly, efficiently, and quickly. It is trusted by those using it. People have the following questions regarding the use of pagers: the benefits of adding additional capabilities to a pager, the difference between a pager and a fixed phone or mobile phone, and the price of the service.

The specialist explained the use of a pager in a general way by saying: "A pager is not like the fixed phone or mobile phone which we understand well. With a pager one is not able to speak or return calls as with a telephone; its only function is to receive a paging signal. No matter where one might be in a 60 km area, one can be notified by the pager signal and by looking at the number code on the screen. The meanings of the number codes are printed in the manual. The reasons for using pagers are: They are easy to use, and they have the capability to make inspections, to receive new codes instead of the old codes, and to retain a code. They are also economical, that is, they use low voltage-only one 1.5 volt battery. The battery can be used for a month or more. Compared with a portable phone (a mobile phone), a pager is less expensive. A pager costs 123,200 kip, which includes the price of the pager itself, 98,000 kip; the charge for joining the network, 1,400 kip; the

cost of insurance, 8,400 kip; and a fee of 2,800 kip. The monthly service charges vary; they are about 7,000 kip per month. Portable phones are very versatile, but their range is limited, and they are very expensive—about 1.3 to 1.4 million kip. They also require another 70,500 of equipment and use up batteries (batteries). As for using a pager, it just involves entering the number of one's own unit or the number of someone else's unit which are attached to the back of the unit. If one needs to talk by telephone with someone else, one just calls the paging center at telephone number 169,868 and tells them the number of the person's pager who is to be paged as well as one's own first and last name and what our message is or that the person being paged should call a certain number. In just 30 seconds the person being paged will receive a signal on his pager. In addition if one uses a pager together with a portable phone, it is very convenient, and one can call another person quickly. Using both systems together is best for businessmen, doctors, etc.... In summary having a pager is like having a secretary!"

At present the paging station has four telephones and four computers. Of these only two are used to receive and send paging signals. This is because the number of people using the paging system is not yet large. And one of these two units is a special unit for wake-up calls and for starting and stopping work. Later this special unit will be used to provide special [fee] services such as the daily weather report and foreign exchange rates.

The setting up of the paging station of the Lao Asia-Pacific Electronics Company Limited required an investment of \$3 million or 2.467 billion kip. Considering the size of the investment, were they afraid of losing money and was this appropriate for our country? Comrade Va, a marketing specialist said: "We are confident that in the future Laos will develop. This investment will help encourage production and the development of the country. Therefore when it was decided to make the investment, we were not afraid of losing money. In addition in the future we will expand to other provinces and will coordinate with Lao communications in setting up stations in other locations."

## HUNGARY

### **Austria's Schrack To Rebuild MAV Communications Network**

*92WS0412B Budapest MAGYAR ELEKTRONIKA  
in Hungarian Feb 92 p 53*

[Unattributed article: "Schrack's Gigantic Deal With the MAV"]

[Text] At the cost of no small effort we have learned something about development at the MAV [Hungarian State Railways]. In an earlier issue (No. 11, 1991) we reported on a joint venture with Alcatel, now we have received information about a very significant deal with Schrack.

Surely not everyone knows that the MAV has the largest so-called private network in Hungary. Still, the MAV is owner and operator of a national telephone network. The network of the MAV, naturally, is not public, it serves only to connect railway installations and transmit railway information. Nor is it surprising that this network is just as obsolete as the public, postal network. (More precisely, the national, public subscriber network of the MATAV [Hungarian Telecommunications Enterprise].) Here also the rotary exchanges still revolve, and it is actually a technical miracle that these machines, some 50 to 60 years old, can do so. The fact is that they no longer meet contemporary needs and soon there will be no spare parts for them, so a better place for them would be in a museum rather than in a national network.

Many competed to replace the exchanges of the MAV. Out of many well known firms the competition was won—as Istvan Mandola, chief of an MAV main department, said—by Schrack Telecom A. G. The result is not so surprising as earlier Schrack got a similar commission from the GYSEV [Gyor-Sopron-Eberfurth Railroad], the old partner—in telephone matters—of the Austrian railways (OBW).

Readers of MAGYAR ELEKTRONIKA are already acquainted with the digital exchanges of Schrack. The Multidat 10,000 is a very modern digital exchange capable of providing many services which can also be used to set up large private networks. (Our readers can find more detailed information about its technical specifications and services in issue No. 3, 1991, of MAGYAR ELEKTRONIKA.) The modular construction makes it possible to install it in a configuration meeting the needs.

In addition to the main MAV exchange in Buda many—small and large—exchanges must be replaced in such a way that operations can be shut down for just a moment. The leaders of the Schrack firm—according to Mr. Werner Kastler, a member of the Schrack directorate—imagine doing this by putting all the exchanges into operation at the same time. Accordingly, they are training the MAV experts to operate them so that the

switch over will be a matter of a moment. Then the old exchanges can be taken to a museum.

The MAV network is an analog one, so the digital exchanges—at least it so appears for the time being—can be connected together only in the analog way. Complete renewal of the transmission network involves a sum which exceeds the present financial strength of the MAV. In the course of the interview Mr. Mandola stated that it would be good if partners were found for network construction. For example, it would not mean substantially greater expense to lay a multistrand, larger capacity optical cable from which other firms might get lines (fibers) even if only on a given section. The associated firm could decide what equipment to connect to the two ends of the cable. The lack of a telecommunications law is causing no small problem in realization of the ideas.

Financing the project was the biggest problem. The contra item of the order received by Schrack is 80 million schillings, the largest private order the firm has ever received. The money is being provided—within the framework of export financing—by the Austrian bank Credit Anstalt; the Hungarian sponsor is the MHB [Hungarian Credit Bank].

### **Hungaro DigiTel's Operating VSAT System**

*92WS0413A Budapest MAGYAR ELEKTRONIKA  
in Hungarian Jan 92 pp 21, 22-23*

[Article by Tamas Fraknoy, Denes Jobbagy, and Jozsef Keringer of Hungaro DigiTel, Ltd.: "An Operating VSAT System in Hungary"]

[Text] There is increasing interest in our country in VSAT [Very Small Aperture Terminal] systems. The majority of potential users already know that development of a network realized with VSAT technology is a realistic possibility in Hungary too; one can be achieved at a rational price and, what is more, it can be realized quickly.

Today the development of the computer technology infrastructure in Hungary has already gone beyond the use of individual computers. A real and urgent need to develop networks has appeared. This development can be followed well in the development of the activity of the Muszertechnika [Instrument Technology] Company. A recognition of the Hungarian need for VSAT networks came about in connection with the Muszertechnika Company's search for data communication possibilities which can be realized realistically and quickly. This led to active cooperation in the Hungaro DigiTel firm. Hungaro DigiTel was created two years ago to provide VSAT. The founding members were the Muszertechnika Company, the Telecommunications Research Institute, the American firm GTE Corporation and the Austrian firm Credit Anstalt Investbank. A sense of purpose dictated the "finding one another" of the founders of Hungaro DigiTel. Realizing VSAT systems is to a significant degree a computer engineering and network design task. The Muszertechnika Company is coordinating this,

in cooperation with partner firms and users. The experience of experts from the Telecommunications Research Institute in the area of microwave systems is another pillar of the undertaking. The Credit Anstalt Investbank acts as investor.

The defining member of the consortium is the GTE Corporation, still little known in Hungary. Last year GTE united with the Contel firm, thus becoming the largest telecommunications enterprise in the United States. Also in the recent past it began to spread in Europe as well. GTE Spacenet—which is a member of the GTE Corporation—now operates 11 artificial satellites the total value of which is about \$1 billion. All the satellite telecommunications services which exist today are offered by it. Within this it operates a number of networks—several hundred made up of several thousand VSAT's.

The figure illustrates the Skystar Enhanced system, the newest VSAT system of GTE Spacenet. One can see in the figure the members of the transmission chain and the optional dialing reserve lines. Even without detailing the functions of the several elements of the system it can be seen that it is built up of similar subassemblies. This modularity makes possible simple expansion and the development of optional redundancy.

What advantages justify domestic use of the Skystar system of GTE? One of the unique features of the system is that it permits use of the Compact Hub. The Compact Hub is a low power hub equipped with a small antenna (2.4 meters) which can be operated economically even in the case of 30-50 VSAT's. Naturally this is not the upper limit, the system can be expanded further. The largest Skystar system operated by GTE Spacenet—that of the K-Mart department stores—contains 2,200 VSAT's. Use of the Compact Hub under Hungarian conditions is very favorable as it can be installed with a relatively small investment. Returning to the operating mechanism of VSAT networks, the advantage of using a domestic hub is obvious. Connecting the host (or hosts) in Hungary to a hub somewhere in Europe (Portugal, for example) would be a little clumsy, so probably the solution would be VSAT-to-VSAT communication. An additional disadvantage of this—going beyond the already mentioned double response time—is that it also doubles the satellite channel capacity needed for transmission. At present European prices this is not a negligible factor. Another advantage of the Compact Hub is that it makes possible, even for smaller networks, a choice between a dedicated hub and a shared hub. In the photograph one can see the antenna of the Compact Hub of Hungaro DigiTel on Kinizsi Street. Its size is well indicated by the TV receiving antenna installed beside it.

Another advantage of the system to be mentioned is the incoming media access protocol, AA/TDMA [Adaptive Assignment Time Division Multiple Access], developed by NEC. We distinguish three typical types of data traffic in the case of differing applications. The first is interactive, where the size of the transactions is small and the

response time requirements are strict. Querying a record of a database would be an example. In the case of batch type traffic we are talking about transmission of larger volumes of data; an example would be a file transfer. The last has a stream character, where an application uses a given band width continuously (an example of this would be continual collection of measurement data). A well suited satellite channel access mode can be found for each type of traffic. Aloha (also called RA/TDMA—Random Access TDMA) is for the interactive type, place occupying (or DA/TDMA—Demand Assignment TDMA) is for the batch type and permanently assigned (Permanent Assignment) is for the stream type. Naturally, from the fact that these traffic types differ from one another in this way, it follows that a given channel access protocol transmits with much worse efficiency traffic which does not suit it. For example, it is not very good to realize file transfer with Aloha. The problem is that in general these traffic types occur in a mixed way, in ratios which vary in time relative to one another.

One widespread solution to the problem is to divide the available channel capacity among the three access modes depending on the needs. The great disadvantage of this solution is that it cannot adapt to the dynamically changing need variations which arise in the course of time. A typical example of this is the daily traffic of a bank. During working hours the interactive type is typical, while the batch type is typical after closing. The adaptive algorithm of AA/TDMA solves this. After setting aside the band width needed for stream type traffic the remainder is of the RA/TDMA or DA/TDMA type depending on the length of the message to be transmitted. If the packet fits into a single frame it is sent according to the random access of Aloha. If not, the first frame of the packet goes with Aloha but in the frame there is a demand for occupation of the number of frames needed to send the remaining part of the packet, so the rest of the packet is transmitted with the place occupying protocol. It can be seen that due to its dynamic adaptation to conditions AA/TDMA uses the available satellite channel capacity much more favorably.

The first thing to be installed in Hungary was a demonstration Skystar VSAT system—primarily in the interest of testing the different network systems in a real environment. The State Insurance Company is the partner of Hungaro DigiTel in this still ongoing experiment. The hub was installed in the building of the computer center of the State Insurance Company and five VSAT terminals were installed at various points in the country. In the first phase of the project interconnection and testing of the UNIX based networks was done with an X.25 interface. UNIX, worthily proud of its openness and developed communications possibilities, passed the test well in the "domestic" VSAT environment, but AT&T, SCO and SINIX UNIX systems were also used, mixed together, in the network. The experiments are continuing already in the direction of concrete uses. On the basis of

experience with the demonstration system thus far the earlier anxieties in connection with installing the American system in Hungary have proven to be without foundation. The years of experience of the American provider greatly contributed to the untroubled installation and initial operation of the network.

We hope that correct professional and business activity will finally prove successful and will create a real and efficient communications possibility for VSAT users in Hungary. We are confident that Hungaro DigiTel will become a successful provider of domestic VSAT.

**Csucstechnika CEO on Developments, Strategy**  
*92WS0412A Budapest MAGYAR ELEKTRONIKA*  
*in Hungarian Jan 92 p 3*

[Interview with Sarolta Makara, director of Csucstechnika, Ltd., by B.L.; place and date not given]

[Text] Csucstechnika [Peak Technology] is the only firm in Hungary which is now developing telephone subexchanges. Our readers already know these small switchboards from our issue No. 3, 1991. My new interest in the firm was aroused by the fact that they have opened a shop in Obuda and by the fact—not least of all—that the editors have entrusted the modernization of their telephone system to Csucstechnika.

[MAGYAR ELEKTRONIKA] It is a bright spot in the life of a journalist if he can interview—in the line of duty—a smiling, blonde lady. Let me ask you first to say a few words about how you got started.

[Makara] Csucstechnika was formed in 1986. This 100-percent private firm came into being in the small cooperative form then permitted; since then we too have become a limited liability company.

Originally we were computer technicians, so our goal was the development of computerized systems. At that time we thought that it would be good to deal with the Apple compatible category, since it was not yet of interest to the firms formed earlier. However, the quickly spreading IBM XT and AT compatible computers soon forced us from the market. By the time this happened we had learned what can be done with a microprocessor, and even today this is our favorite "toy."

It is also part of the chronicle of the beginning period that—in cooperation with ITEX—we developed a projection terminal for the printing industry. Seeking other microprocessor applications we got into the small telephone exchanges. There was a great shortage in Hungary of small exchanges using one or two incoming lines and four to six outgoing lines. At the same time there was a great demand for them, since there were few main lines (this is still true!) available to subscribers. Our little exchanges help these problems.

[MAGYAR ELEKTRONIKA] So we have come to the little exchanges. Could you outline your developmental concept?

[Makara] When we began to deal with the development of microprocessor telephone exchanges two years ago many people smiled at us. But our experts predicted that 1,000 small exchanges could be sold on the domestic market. We were right. We are already beyond 1,500 units.

Two factors determine our developmental thinking: our developmental capacity or material resources and microprocessor development experience.

In the course of our developments thus far we started from the given situation, that there are few "city" lines and many extension lines and that even telefax should be connectable to one to two incoming lines. So we made the Telecenter in 1/5, 1/6 and 2/6 incoming/outgoing line versions, with an automatic fax selection card. We are counting on an increase in incoming lines in the future; thus, for example, our 4/8 exchange will be ready soon. There is an ever increasing demand for local fee accounting also; many small firms lease premises and lines in large office buildings. The Tone mode version will be able to use the services of the new digital main exchanges.

We have asked the aid of the OMFB [National Technical Development Committee] to speed up the developments; we hope that they will support the development of domestic industry in more than principle.

[MAGYAR ELEKTRONIKA] You also got into buying and selling when you opened your shop in Obuda. I know that today in Hungary this is the sort of investment with the shortest payback time, still a question occurs to me. Why would an undertaking typically involved in development activity "poke its head" into something like this?

[Makara] The thing is very simple. On the one hand we want to reduce the burden on the developers, so we are turning to trade activity. On the other hand, as you said yourself, this is a good investment. Development requires money, and goods must be sold. In this shop we will sell primarily our own products, but, naturally, we will try to satisfy the desires of the customer. We thought that there was not yet a suitable offering in this part of the city and that there would be enough demand so that we could maintain a small shop economically. The Florian Square area is well trafficked enough that if people know about our shop they will come to see us.

#### **KFKI Presents Computer Network System Solutions**

*92WS0413B Budapest MAGYAR ELEKTRONIKA*  
*in Hungarian Jan 92 p 25*

[Article from KFKI Computer Networks, Ltd.: "Computer Networks From the KFKI"]

[Text] Experts at KFKI [Central Physics Research Institute] Computer Networks, Ltd., have for years been dealing with—among other things—the design, construction, and operation of Ethernet networks and with aligning, optimizing, and debugging already existing networks.

Our firm is constantly developing its own family of IEEE 802.3 (Ethernet) devices, and hopes primarily to get on the market with new devices aiding network operation which will increase the reliability of installed systems. We would like to report here on two of our new developmental achievements.

The NR 828 multiport IEEE 802.3 (Ethernet) repeater, which is widespread in the country (more than 100 operating units already), has been expanded with a screwed line pair (UTP) port. A port contains one or two standard RJ 45 connectors which makes possible direct connection of workstations and the cascading of repeater units. In this way the NR 828 supports any standard IEEE 802.3 (Ethernet) medium (thick or thin coax, opto, UTP), which makes possible network construction from inhomogeneous physical mediums.

Considering the great success, both national and beyond the borders of the country, of the Ethernet Network Monitor Center (ENMC) we exhibited at the COMFAIR show a monitoring system which can be remotely queried, having a Kliens-server architecture (the RENMC). We can now report that we have a version which operates under Microsoft Windows 3.0. This makes possible continual monitoring of the network by MS-Windows users even with the simultaneous running of other user programs. These software products require no special hardware environment (they work on the WD8003 and WD8013 cards), their prices are favorable, and with their aid the discovery of network failures can be greatly accelerated.

#### **French Paper on Conflict Over Hungarian T.V.**

92CH0438A Paris LE MONDE RADIO TELEVISION  
in French 23-29 Mar 92 pp 16-17

[Article by Yves Michel Riols: "Hungarian Fog"—first three paragraphs are LE MONDE introduction]

[Text] The Hungarian parliament is due to approve, in the near future, a law authorizing the creation of two—one radio, one television—private national channels.

But many uncertainties remain.

The political class is trying to maintain its influence on the public service media.

At first glance, the situation appears strange. In early May, Hungarian television was assigned a vice president whose purpose no one really knows. His duties are to be defined by the president of the two public channels. As it stands, the latter had been teaching sociology in an American university for several months when his deputy

was appointed. The first contact between the two men was, to say the least, distant: The day following his appointment, the number two man was reprimanded by the president, who was still in the United States. They finally crossed path a few days later, in Budapest, in the waiting room of the Presidency of the Republic, not knowing that they had each requested a meeting with the chief of state.

In fact, this type of imbroglio no longer surprises many people in Hungary and it illustrates the confusion prevailing in the Hungarian audiovisual industry. Nearly two years after the change of regime, in the spring of 1990, the Hungarian television and radio networks are still sailing over troubled waters and they are regularly finding themselves at the center of intense political quarrels.

Unlike the newspapers of the written press, practically all of which have been privatized, the five national channels (two for television, three for radio) remain endlessly in "transition." With the collapse of the socialist system, they no longer consider themselves "state" media, but, as yet, they cannot demand to be labeled a "public service," for they operate without precise specification. It does not prevent them from being frequently exposed to public scorn for nonrespect of so-called "rules" which each person invents for his own convenience. The fate of PAM (Hungarian Audiovisual Scene) was supposed to be one of the priority dossiers of the first government of postcommunist Hungary, inaugurated in May 1990. Since then, countless commissions have submitted reports on reforms and counterreforms, all of them, some more than others, usually elaborately involved. Two bills finally saw the light of day, and the latest should be submitted to parliament in the near future. But, contrary to all expectations, this text will not tackle the central issue, namely the release of frequencies, which will be the subject of another law submitted to the deputies between now and this summer.

The Hungarian radio and television networks are utterly confused by this obsessing uncertainty mixed with a climate of higher political bidding. As it stands, only one thing appears to be sure: Changes will soon quicken and competition from the private sector promises to be severe.

The PAM's future has been frozen since 3 July 1989. On that date, the then socialist government, in agreement with the opposition and radio and television representatives, imposed a moratorium on frequencies. The goal was to avoid risky privatizations and a political seizure of the airwaves, at a time when the country was engaged in extensive negotiations to prepare the coming of democracy. Initially, this moratorium was scheduled to last only to the end of 1989.

After the first free elections, marked by a fairly bitter campaign, both the new coalition government and the largest segment of the opposition wanted to bury the

hatchet. A desire for consensus and compromise surrounded the July 1990 nomination of two famous sociologists as head of the audiovisual media, Elmer Hankiss for television and Csaba Gombar for radio.

But the state of grace was short lived. Without a specific legislative guardrail, it was very difficult for the two presidents to shelter television and radio stations from ever endless pressures. In January, the leadership of the Democratic Christian Party, one of the three factions of the ruling coalition, demanded both men's resignation. An inadequate number of religious shows was given as the motive. As for the opposition, it accused television of being at the service of the government.

Ferenc Kulin, the "Mr. Media" of the Democratic Forum, the prime minister's party, acknowledges without complexes that "televised news is progovernmental, whereas radio news is rather favorable to the opposition...." Gabor Banyai, the interim television president (MTV), is aware of this strong politicization, with good reasons: "I was fired from television 10 years ago," he declares, smiling, "and today, I must work with those who drove me away." He acknowledges that the way news is handled is far from being objective. He adds: "The new generation of journalists will not come about overnight. In 40 years, we learned very well how to hide our personal opinions in our reportages. These practices are not forgotten overnight."

To avoid repeated conflicts and take the sting out of the crisis, everyone agrees that it is urgent to lay the foundation of a new audiovisual order guaranteed by law. A broad policy is outlined in the new recast version of the project, soon to be submitted to parliament. But, there are many alternatives to each sensitive issue. However, this project calls for the creation of a private national radio station and a private national television channel, accompanied by several local ones. On the other hand, the limitations on foreign participation have not yet been defined. Ferenc Kulin insists that "it will probably be smaller than 50 percent."

#### **"Public Television, a Deceit!"**

Over 150 requests for frequencies were filed with the Ministry of Telecommunications. There are a good many candidacies for the two national channels. Many groups, including Hersant, Bouygues, Bertelsman and London Weekend Television, are said to have expressed their interest. Silvio Berlusconi, an Italian, had already submitted a commercial television proposal to the former socialist government and his company, Fininvest, had opened an office in Budapest more than a year ago. For the time being, the moratorium is holding firmly with one exception: a small alternative radio station, Radio Tilos (not allowed), which has been broadcasting three times a week in Budapest since August (LE MONDE 1 October 1991).

The usually very reserved Csaba Gombar, the president of the radio network, cannot help but smile when he

mentions the plans being considered for a future regulation authority. This bill has so many committees and subcommittees, all entrusted primarily with spying on one another, that even the audiovisual professionals have difficulties making something out of it. It can be said to simplify that each national channel, whether public or private, will be headed by a supervisory commission which will be required to watch over the content of programs and the implementation of specifications. These commissions will be made up of one representative from the six parliamentary parties and of some fifteen social organizations. However, they will only play a consultative role, and the prime minister will have the right of veto over all their decisions.

In another development, provision is being made to create an organization entrusted with allocating frequencies; the government will be the only one allowed to appoint or dismiss its president. The same rule would be applicable to the presidents of the television and radio networks. But the opposition is demanding that the holders of these key positions be appointed by a two-third majority of deputies, a necessary requirement, according to them, to ensure the independence of these media.

Independently of these two political-legal creations, financing remains the main problem. Csaba Gombar emphasizes that "to speak about public television in Hungary is a deceit. The main portion of our resources comes from license fees and advertisement." Direct state subventions provide 1.5 billion of the 8.5 billion forint budget allocated to MTV in 1992 (1 franc is worth about 12 forints). But, while waiting for the end of a parliamentary investigation requested by the government parties on the "objectivity" of television, only one third of this amount has been released.

Meanwhile, the television and radio stations are hoarding a maximum of advertising revenues, knowing that they will lose many advertisers with the coming of private stations. The result on the small screen sometimes borders on indigestion. But, in the absence of specifications, there are no quotas for either advertising or programs. In order to keep the funds of the public service media afloat, the creation of two foundations, their ways and means are still being debated, is being considered under the bill.

Even before the coming of the private sector, Hungarian television had already tasted the anguish of deregulation. Upon assuming his duties, Elmer Hankiss, the new president, had made the two networks competitive. The employees were gathered into some 40 production teams which had to compete among themselves to sell their programs to the leadership of the two channels. The objective was dual: To stimulate initiatives and, in time, to retain only the best teams. In the space of two years, the MTV work force has already been reduced from 4,000 people to 2,000.

The predictable impact of this policy was not long in coming. Complementarity between the two channels has almost disappeared. They are engaged in a true race for the audience, and they do not hesitate to change their programming at the last minute in order to torpedo the programs of the rival channel. The MTV audience increased by 10 percent in one year. Hungarians watch television an average of three hours per day. But this phenomenon is principally due to the increase of the price of leisure activities. In periods of recession, television still remains the least expensive recreation.

#### Half of the Country Watches "Dallas"

Even though the two public channels are waging a desperate battle, their programs remain nonetheless appreciably similar. Political programs hold a substantial lead with 24 percent of the broadcasting time. TV1 is however more popular than TV2, due in particular to the impact of "Dallas"—the only American series broadcasted on Hungarian television—watched by half of the population of the country!

Except for a dramatic turn of events, the two audiovisual and frequencies laws should be passed between now and this summer. But while the situation is becoming stabilized, the next parliamentary elections of 1994 will be approaching. In that context, the first steps of the new PAM will undoubtedly be sorely tried.

#### Details on Development of Cable T.V.

92CH0438B Paris *LE MONDE RADIO TELEVISION*  
in French 23-29 Mar p 16

[Article by Yves Michel Riols: "The Americans Are Getting Established in Cable T.V."]

[Text] The Americans have positioned their audiovisual bridgehead in formerly socialist Europe, on the third floor of an old tobacco plant in Budapest. It is the location of Kabelkom headquarters, a joint company, 50 percent of which is owned by Time Warner, the owner of HBO, the largest paid television network in the world. In October 1991, Kabelkom launched the first access-coded channel in Central Europe; it broadcasts three movies per evening. For the time being, it is being transmitted to six Hungarian towns. The first 15 minutes is clear, but thereafter, only the 30,000 subscribers equipped with a decoder can follow the programs.

HBO is establishing itself in an already developed market: There are some 50 local cable networks throughout the country, with nearly 800,000 households subscribing to cable (more than in France). Fifty-seven percent of the population can receive programs via satellites, broadcasted essentially via ASTRA. But, in prime time, the audience of these channels does not exceed 6 percent. Robert Leighton, the director of Kabelkom, notes that "in Hungary, a larger number of people have access to satellite television than to telephones."

Over the next two years, HBO intends to invest more than \$30 million for the development of Hungarian networks. Its long-term objective is to set up the first national Hungarian-speaking movie channel. But, in its current version, the bill contains two major obstacles: Network owners do not have the right to broadcast their own programs, and the greater part of these programs must be Hungarian or European.

## POLAND

#### Fiber-Optic Telecommunications Installation

92WT0138A Warsaw *GLOB 24* in Polish 20 Feb 92 p 4

[Article by Krzysztof Szczesniak: "The First in Central Europe: A North-South Digital Line"]

[Text] Theft and vandalism on Polish railroads are unmatched. For some time now, entire kilometers of copper wire, semaphore-guidance cable, etc., have been disappearing. According to the Director General of NKT Poland Wojciech Kuczynski, unknown thieves also stole telecommunications cable laid alongside a railroad. They pulled it out of the earth by means of a tractor over a distance of a couple of hundred meters, and when they found that the core contained, instead of copper, a couple of translucent strands, out of spite they hacked through the cable at several places with axes.

There are no words to describe how much trouble their thoughtless deed caused to builders. That is because fiber-optic cable does not like to be joined, but if it has to, the operation of "welding" one fiber to another resembles a surgical operation. Sterile conditions, measuring devices, reagents, microscopes, monitors.... Everything in order to reduce to a minimum the damping of light at the site of the "weld."

NKT Poland is a company that has now existed for more than a year. It was founded by NKT, a Danish group operating long since in this country, which has however become more widely known only three years ago when it won the contest for laying an undersea cable between Bornholm and Koszalin. That investment enabled Poland to emerge from backwardness and join the network of international telecommunications linkages. As a result, Polish subscribers were provided with rapid and effective links to the entire world.

At the time COCOM restrictions used to be still binding and this resulted in countless problems when applying to have that project approved. Ultimately, an agreement for the delivery of Western equipment with 34 Mb/second capacity was signed, which was no small accomplishment. Before that equipment could be installed, however, communism began to collapse and by then it became possible to convert to 140 Mb/second technology. Finally, on 15 November 1990 the cable on the Baltic Sea bottom was laid and operational, but, as it turned out, that was only the beginning



In March 1990 NKT proposed to Poland laying a land-based extension of the Koszalin-Bornholm cable. Its bid stated that two Danish companies would work on this project: NKT would provide the facilities and equipment, while Great Northern Telegraph jointly with Telecom Denmark (GN) would fund the project. The funds invested were to be recouped from fees for telephone traffic. The cost of the entire project was estimated at about \$40 million and, according to an expertise by Elektrim, it was to be recouped as soon as within two years.

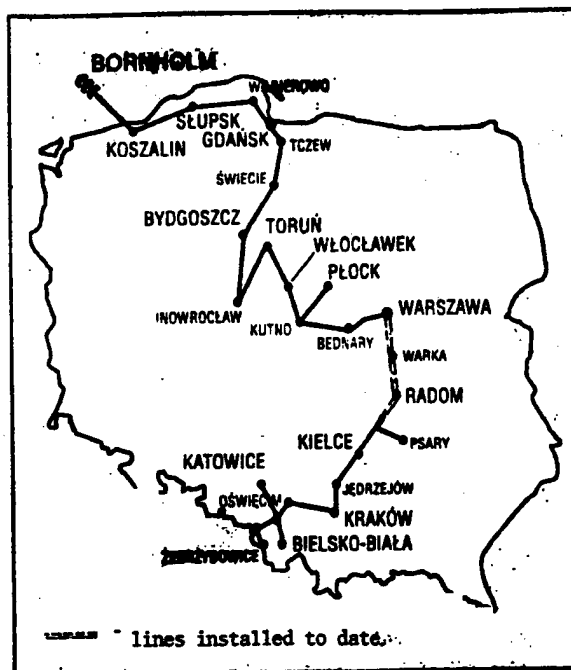
Ultimately, an agreement was signed providing for a 15-year period of repayment from operating profits, so that the Polish side would receive 85 percent and GN, 15 percent. During the same period the net earnings of the PPTT [Polish Post, Telegraph, and Telephone], now Polish Telecommunications, Inc., from this project could be much greater.

When in April 1991 the agreement was formally signed, reporters were assured that the cable would start operating and producing a profit before year end. As I recall it, the reporters shook their heads disbelievingly. But the Danes remained unperturbed by their skepticism and encouraged them to view a videotape demonstrating that, owing to the use of a unique technology, that target date was feasible.

The screen showed a yellow train that, like a harvesting combine, did everything: Without stopping, it excavated a trench, laid cable in it, and covered it with earth. To be sure, railroad representatives argued that this would have to be preceded by digging up and re-laying elsewhere various other cables, scrap, and installations alongside Polish railroad tracks, but they too were optimistic. As it turned out, however, not technical problems but the bureaucracy ruined that impressive timeline. It took a couple of months to clear the loan guarantees and thus the start of the project had to be delayed.

The first segment began to get laid on 15 November 1991. According to an unwritten agreement, the first 10-15 percent of the entire 1,500 km long line was to be laid by the Danes, who would at the same time be training Poles. It turned out, however, that our compatriots rapidly absorbed what was to be done, so that nowadays only one Dane remains to supervise the work. The special track plow was purchased from DSB, the Danish railroads, by the Zielonka Railroad Automation Works.

In this place it is worth noting that Polish State Railroads also is a major participant in this project. Two different cables, a telecommunications cable and a railroad cable, are being laid simultaneously. The latter cable will serve exclusively to streamline communications at Polish State Railroads. Even now it is as plain as a pikestaff that one plow is not enough and the railroaders are looking for another, or perhaps two. The expect in the future to use this technology to lay fiber-optic cable in other countries and thus do good business. The Danes have a matching goal: They provide the technology and train



the Poles to use it, because they are aware of the backwardness of Central Europe in the domain of telecommunications and there is plenty to do in that domain for the next couple of years but Danish manpower is much more expensive than Polish. NKT Poland expects about 60 Poles to be employed in this work.

Early last February the cable-laying plow train advanced as far as Skarzysko-Kamienna. During the present winter there occur periods when excavation is impossible owing to strong frosts, after which work is resumed sporadically until the spring. Even so, 140 km of cable have already been installed southward from Warsaw. The selection of Warsaw as the starting point was deliberate considering that a digital radio line already exists between Warsaw and Koszalin and is completely adequate for the present, whereas south of Warsaw there is nothing like that. Thus, the cable-laying train will advance as far as Zebrzydowice and thereupon return to Warsaw and begin to work in the northward direction. By the end of 1992, that is, unfortunately, after a year's delay, the entire 1,500 km long fiber-optic line should begin to serve international and domestic telecommunications. Between Koszalin and Zebrzydowice it will be necessary, moreover, to build more than 30 stations serving as branch lines extending to the cities located along the trackage. The race against time is continuing. It is an open secret that whoever finishes first laying such a fiber-optic cable will garner the most money from fees for transit traffic. Thus, every month of delay may mean that one of the neighboring countries will overtake us, and then we will be the losers. The more so considering that a similar cable providing communications with

Southern Europe will be laid across Czecho-Slovakia, Hungary, and Yugoslavia. It would be great if telephone conversations with Scandinavia were to be held via the Zebrzydowice-Koszalin Cable.

Another needed project is the linkage of East with West, that is of Berlin with Moscow (via Warsaw) by fiber-optic cable. A segment of that line will be installed with the aid of World Bank credit; the negotiations are to be concluded this month or at the latest in March 1992.

### Media Official Interviewed on Broadcasting

AU0704134392 Warsaw RZECZPOSPOLITA in Polish  
3 Apr 92 p 3

[Interview with Marian Kislo, director of the State Radio Communications Agency, by an unidentified reporter; place and date not given: "Cable Television Is the Future"]

[Text] [RZECZPOSPOLITA] How many people are trying to set up commercial radio stations?

[Kislo] Six hundred and thirty-one people contacted us. We asked all of them to provide accurate information about the kind of station they want to set up, where they want to broadcast from, and with what strength. Some 40 percent of them responded, which means that right now we have 270 applications waiting to be processed.

[RZECZPOSPOLITA] What are their chances of obtaining approval?

[Kislo] The frequency range currently in use, from 66 to 74 MHz, is narrow and can only accommodate two stereo programs. Three programs have been squeezed into it, resulting in poor quality, so the addition of commercial stations, which are bound to appear in some cities, will only make the situation worse. Apart from that we are having trouble with international agreements because in Germany and Sweden our frequency range is used by the police and emergency services. Polish stations cause them interference, so these countries are reluctant to let us use the new frequencies. Switching to a new frequency range, from 88.5 to 108 MHz, will be a solution for everyone, and we think all radio stations in Poland will change over to this new frequency range by the year 2005.

[RZECZPOSPOLITA] What will happen when we do change?

[Kislo] The new range is considerably wider, therefore it gives greater possibilities, and because the West uses this range in the same way, it will be easier to reach agreement over new frequencies.

[RZECZPOSPOLITA] Is the allocation of every single frequency agreed with the West beforehand?

[Kislo] Only low-power stations situated in the center of Poland do not require prior approval. In the 1960's we signed an international convention that placed us under

an obligation to report all the details of each station—its location, strength, and the height of the antenna. The convention also stipulates the method to reach international agreements, as a result of which we have three months to examine every single proposal that reaches us from abroad. If any side voices any objections, the next proposal is considered, and another three months go by. We are accused of taking too much time to decide about new frequencies, and yet all this is the result of international procedures. There is nothing we can do about that. We discuss matters relating to UHF FM stations with Sweden, Germany, Austria, Romania, Czechoslovakia, Hungary, Denmark, and the countries of the former Soviet Union, so it is not surprising that talks can sometimes last up to one year.

[RZECZPOSPOLITA] When was Poland's new broadcasting frequency range approved?

[Kislo] In 1984, at a conference in Geneva, which approved our plan on using the new frequency range. Of course we are making certain changes now, but at that time we reserved six frequencies for high-power stations, which means we can have six nationwide programs. Right now we are discussing low-power stations. We can already open some nationwide programs, but not all of them. In Poland, the 87.5-100 MHz range is partly used by television. To give it over to radio, we would have to take it away from television, and for that we would need money to invest in a new antenna system and purchase and install new transmitters. Frequencies of above 104 MHz are used by the Army for air navigation purposes. The Polish Army has committed itself to stop using these frequencies as of May, but we do not know if the Soviet forces still stationed in Poland will follow suit. This is a normal situation. The air services of Denmark and Sweden also use these frequencies. If certain frequency ranges are unused, they are placed at the disposal of various services. Because right now there is a greater demand for frequencies in which to accommodate radio programs, we are transferring the emergency services and traffic police to other frequencies, but we need time to replace the equipment. In principle we can set in operation stations broadcasting on the 100-104 MHz range at any time.

[RZECZPOSPOLITA] How many stations can you fit in there?

[Kislo] A lot. One must remember that particular frequencies can be used many times inside any given country, for example by local stations. We expect to be able to accommodate six national programs within the new frequency range, and in larger cities we can accommodate up to 15 low-power stations with a broadcast range of 5-10 km. Of course the situation will vary from one place to another. Within the frequency range currently in use (from 66 to 74 MHz), it is possible to accommodate another three to five low-power stations in provincial capitals.

[RZECZPOSPOLITA] Surely not everyone who wants to set up a private radio station will be allocated a frequency?

[Kislo] Of course not, because there is not enough room. As far as the old frequency range in Warsaw is concerned, there are six frequencies available, and 31 applications to fill them have been made. Right now three of them are being used; by Radio "S" ["Solidarity"], Radio "Z," and the Catholic Radio Station of the Archdiocese. Another three frequencies will be allocated, and that is all.

[RZECZPOSPOLITA] Will the public stations get new frequencies?

[Kislo] I think there should only be three public channels on UHF, but the Radio and Television Committee would like to open another channel, which would be a regional one. The church has just been granted a few frequencies and obtained permission to set up a high-power station in Siedlce. If the church receives permission to operate a national station, there will be another two national channels available to commercial stations.

[RZECZPOSPOLITA] How many church radio stations are there?

[Kislo] Seventeen right now. They broadcast the church's teachings. The bishops take full responsibility for them, and they are accountable to the listeners for the content of the programs. We have no right to judge whether a program is Catholic or not.

[RZECZPOSPOLITA] Right now you are having trouble with local stations, correct?

[Kislo] Yes, administrative proceedings vis-a-vis five radio stations and one television station are currently under way. For example in Warsaw, Radio "WaWa" is broadcasting illegally. We have already shut it down once, but they simply started again and are functioning normally despite our recommendation that the station be closed. They have even appealed to the communications minister against our decision. When we tried to close down an illegal radio station in Bielsko-Biala, the station's owner received the backing of the local police, fire brigade, and senators. In such a situation, who is supposed to uphold the law in Poland? We are alone.

[RZECZPOSPOLITA] How does your agency detect pirate stations?

[Kislo] We eavesdrop constantly. When we hear a new station, we immediately try to locate it. We would be able to do so in a flash if only we had two radio detector vehicles, but we do not, so we have to detect the stations "visually." The applications for the allocation of frequencies are very useful for this, because they usually contain the future location of the station. So if someone decides to broadcast without permission, as in the case of Radio "WaWa," we know right away where the transmitter is.

Sometimes we manage to spot an antenna. The greatest difficulty is with stations that only broadcast from time to time, for example last week in Warsaw an unidentified station illegally broadcast classical music for several hours. We did not manage to find out who they were or where they were broadcasting from.

[RZECZPOSPOLITA] What kind of fine can a pirate expect to pay?

[Kislo] All we can do is refer him to a petty court, which can fine him one million zlotys. Theoretically the court can also order the equipment to be confiscated as an additional punishment, but because the additional punishment cannot exceed the main punishment, in other words one million zlotys, there is no possibility of confiscating it. Even a microphone costs more than one million zlotys. We fight the pirates by closing down their stations, sealing their main sockets, and sometimes cutting off their electricity supply.

[RZECZPOSPOLITA] What is the situation with private television stations?

[Kislo] There is one legal station, "Echo" Television in Wroclaw, and one illegal station, "Morze" ["Sea"] Station in Szczecin. The future of commercial television in Poland is worse than that of commercial radio. Today we have two television channels, and there are technical possibilities for a third one. However, the Radio and Television Committee wants the third channel to be taken up by public television for its regional programs, and if that happens, there will be no possibility for a commercial station covering the whole country. In my opinion, if we have two public channels, surely one can include regional programs in them.

[RZECZPOSPOLITA] How many people are applying to set up television stations?

[Kislo] Some 208 people have applied so far, 161 have responded to our questionnaires, and nine people want to create a nationwide private television station. Many people claim that if they cannot receive permission to broadcast in at least one voivodship, then there is no point in setting up a television station at all, because the risk of bankruptcy is too great.

Some people suggest that only one station be permitted to broadcast in a given area, and that only after that station has built itself up should subsequent stations be permitted to broadcast in the same area.

[RZECZPOSPOLITA] Where do you see the future of commercial television in Poland?

[Kislo] Cable television is the future, one satellite dish for each district, from which programs are relayed by cable. Regional programs could also be conveyed by cable. Cable television can even carry 40 programs, with more in the future. There will never be such a capacity in the traditional television network. Even so, we receive visits from people who want to set up traditional stations, but they have no idea how much it costs to

maintain the entire technical structure. The construction of a station alone costs about one billion zlotys, and the cost of the programs? Perhaps they expect to lift programs from satellite stations?

There are also applications for long-term activity. The representative of one firm involving American capital said he will have no problem with gaining a frequency. For four years his firm will produce programs for public television, establish a reputation, and calmly wait for the first Polish commercial stations to go bankrupt. Then his firm will enter the market.

[RZECZPOSPOLITA] How does the Agency maintain itself?

[Kislo] The law on communications says that the State Radio Communications Agency is to receive revenues for the use of frequencies. We collect radio and television license fees from all firms, including Polish Telecommunications Inc. and church-owned stations. We charge a lot for radio links and for the entire network. Right now we have enough money to survive, and enough for investments. It has been suggested that we pay the funds into the state budget, but then we would never get all of it back. It would be impossible to purchase equipment with which to detect the pirate stations.

[RZECZPOSPOLITA] What do you think the law on broadcasting should be like?

[Kislo] It must enable private radio and television stations to exist. We are opposed to the allocation of new frequencies to new public radio channels and to the creation of a third public television channel. I think the Radio and Television Committee should make maximum use of what it already has.

[RZECZPOSPOLITA] Once the Sejm has passed the law on broadcasting, how long will it take for commercial stations to appear?

[Kislo] About six months, I believe. The very bill calls for the appointment of a National Council, which will announce in the press the possibility of obtaining a broadcasting license, with at least three months in which to apply. It will be necessary to examine the programming proposals and financial capabilities of those applying for a license. My agency will merely examine the technical possibilities.

### Radio Broadcasting Law Issues Reviewed

92EP0210A Warsaw GLOB 24 in Polish 14 Jan 92 p 2

[Article by Grazyna Zurawska: "New Order in the Airwaves"]

[Text] The law on radio broadcasting, prepared by the previous parliament, did not get the approval of the president. Former Deputy Minister of Communications Marek Rusin believed that the law was defective, e.g., that the National Council on Radio and Television that was being formed, was answerable only to God and

history. The law did not clearly define the conditions which a television or radio program must fulfill, it said nothing on the subject of monopoly, nor did it say from what funds public television is to maintain itself.

The parliament had not yet had time to take a position on the previous law on radio and television broadcasting when a new draft was submitted, prepared by a 15-person group of deputies from the NSZZ Solidarity club. The deputies authorized Marek Markiewicz to represent them in their work. In justification, the deputies say that the 1960 law on a Committee for Television and Radio Broadcasting Affairs, which is still in effect, maintains an archaic structure of radio and television public broadcasting, making it impossible for commercial stations to be established. That is why passage of a new law is extremely urgent, because it will bring in—in the opinion of the deputy-drafters—a new set of standards regulating order in the airwaves.

The draft submitted is a version of the draft—deputies Bielecki and Merkel—prepared by the Commission on Culture and Media of the 10th Sejm Session. The deputies remind us that the Sejm on 13 September 1991 passed the law without taking into consideration the corrections made by the Senate. The new draft defines the principles for granting licenses to independent broadcasters, and also a model for transforming public radio and television broadcasting.

According to the new draft, the law appoints a National Radio and Television Broadcasting Council which is the state organ for radio and television broadcasting matters. It functions on the basis of a statute granted by the president of the Republic of Poland. The council is made up of nine people appointed—in equal numbers—by the Sejm, the Senate, and the president. The term of office is for six years, and every two years the term of office for three members of the council expires. Council members must suspend their membership in political parties during their term of office. The council, in consultation with the minister of communications, represents the policy of the state in radio and television broadcasting. Public television programs are supposed to honestly show the multiplicity of events occurring in Poland and abroad. The council will also define the conditions under which broadcasters will conduct their operations and the conditions under which licenses will be granted to disseminate and distribute programs. Licenses may be granted to legal and natural persons living in Poland. Foreign companies may obtain licenses only when their share in the capital does not exceed 33 percent.

The new draft envisages that the broadcaster will create the program autonomously and the imposition of an obligation or a ban on the broadcasting of a specific program or transmission, may take place only on the basis of the law. The National Council will define the minimum amount of programs to be created by domestic producers. It is assumed here that the purpose is to protect Polish radio and television against foreign influences.

The model proposed in the law will describe the method for transforming state television and radio. According to the draft, public television and radio broadcasting units are to function in the form of stock companies, on the basis of the commercial code. Polish Television I is a state treasury company. Presumably, the present II program will be transformed into a state treasury company called Polish Television II, except that it will be formed by regional television companies. The state treasury company called Polish Radio S.A. is a public radio broadcasting company. Companies may derive their income from subscription fees, from sales of rights to programs, from advertising, and from sponsors.

The legislator envisages that every sponsor should be made public and that any advertising will be clearly separate, so as to avoid any doubt that the text presented does not come from the broadcaster. All political parties and organizations taking part in elections to the Sejm, Senate, and local self-governments, will be ensured the ability to broadcast programs on public radio and television. Receipts from subscriptions, the size of which will be determined by the National Council, will go entirely to public radio and television. The penalty for using an unregistered set will be equivalent to the cost of a three-year subscription, plus the payment of a minimum six-month subscription.

**BRAZIL****Santa Catarina To Install Fiber-Optic Cables**

*PY0904022492 Sao Paulo O ESTADO DE SAO PAULO  
in Portuguese 6 Apr 92 Informatics Section p 11*

[Summary] The Santa Catarina State Telephone Company and Alcoa-Fujikura, which is a joint venture between the U.S. Alcoa Company and the Japanese Fujikura Company, have signed a contract for the installation of 370 km of fiber-optic cables between the northern city of Joinville and Sideropolis in the southern part of the state.

## REGIONAL AFFAIRS

### India, Kuwait To Cooperate in Communications

92WT0149A Madras *INDIAN EXPRESS* in English  
21 Feb 92 p 14

[Unattributed article: "India To Provide Kuwait Telecom Expertise"]

[Excerpt] New Delhi—India and Kuwait have signed a protocol for strengthening cooperation in the communication sector under which India will impart training and supply equipment to Kuwait.

The agreement was signed by visiting Kuwaiti Communication Minister Habib Johar Hayat and Minister of state for communication Rajesh Pilot here on Wednesday evening.

The agreement was concluded after two days of talks Mr. Johar had with Mr. Pilot and External Affairs Minister Madhavsinh Solanki on improving ties in the field of telecommunication.

Talking to newsmen here, Mr. Hayat said Kuwait was ready to make liberal investment in India in the communication sector. He said that his country would help India by way of investment in the upgradation of technology.

This would be beneficial to both the countries. The minister said the investment would not only be in the government sector, but also in private and semi-government communication industries.

Mr. Hayat, who also visited the Indian telephone industry factory in Bangalore, said that he was impressed with the Indian technology.

He also lauded the Telecommunication Consultants India Limited (TCIL) with had been awarded a 20-million dollar contract for setting up electronic exchanges and providing equipment to Kuwait.

He said it was with the help of the TCIL that "we had succeeded in restoring our communication system" badly damaged by Iraqi forces. So far 95 per cent of the communication system had been restored.

He said Kuwait could benefit from the Indian expertise. "We will send out technicians and experts for getting further training" in the Indian factories and laboratories.

He said that the relations between India and Kuwait would get a boost with the setting up of a joint commission. The commission would be co-chaired by Madhavsinh Solanki and deputy Prime Minister of Kuwait Sheikh Salim Al Sabah.

[passage omitted]

### Iranian Telecommunications Delegation Visits Pakistan

92WT0143A Peshawar *THE FRONTIER POST*  
in English 26 Feb 92 p 4

[Text] Islamabad—A four-member Iranian Telecommunications Delegation lead by Mahmood Khusarvi presently on an official tour to Pakistan held meetings with federal minister for communication Ghulam Murtaza Khan Jatoi here on Tuesday, says a press release. It may be recalled that earlier the President of Pakistan visited Iran and the Prime Minister of Pakistan recently held detailed talks during E.C.O. [Economic Cooperation Organization] meeting, in which a memorandum of understanding was signed. This visit of Iranian Telecommunications Delegation is the follow up of earlier bilateral States visit.

Both sides exchanged views on the telecommunication sectors and discussed in detail the scope of enhancing cooperation in this field. The minister apprised the delegation about the enormous development, which was taking place in telecommunications projects. He maintained that the government had keen interest in boosting telecommunication facilities for the benefit of the general public, the prospects of connecting Iran with Pakistan on Fibre Optic link also came under discussion. The minister said that as the developed countries of the world were making efforts to use telecommunication development for the betterment and uplift of their people, it was therefore imperative for Muslim countries to strengthen their communication links. During the meeting linking both countries through satellite system and increasing the microwave/international circuits were also viewed. Earlier on their arrival to Pakistan the delegation was briefed by the Chairman, Pakistan Telecommunications Corporation, Mian Mohammad Javed in a separate meeting held between the counterparts at P.T.C. [Pakistan Telecommunications Corporation] headquarters. Both sides discussed matters pertaining to mutual interest in the field of telecommunication with special emphasis on improving existing telecommunication facilities between the two brotherly Muslim countries.

The delegates discussed each other's experience and presently available telecommunication infrastructure in the respective countries' future expansion plans based on the latest technology. They stressed for the exchange of visits to each others manufacturing concern to identify the areas of mutual cooperation in telecommunication technology.

Secretary Communications Salman Farooqui and other high officials of the ministry participated in the deliberations.

## EGYPT

**RTU, Arabsat Sign Agreement on Space Channel**

NC2604205392 Cairo Egyptian Space Channel  
in Arabic 1600 GMT 26 Apr 92

[Text] At noon today, Information Minister Safwat al-Sharif attended the signing of a contract establishing the Egyptian Space Channel's broadcast via the first-generation C-band Arabsat.

The agreement was signed for the Radio and Television Union [RTU] by engineer Mahmud Kishk, head of the transmission engineering sector, and 'Abd-al-Qadir Ji'ayri, director general of the Arab Satellite Communications Organization [Arabsat] for satellite communications. Heads of radio and television sectors, the supervisor of the Space Channel, and a number of Channel 4 employees attended the signing ceremony.

The accord was signed at the Channel 4 transmission center in Ismailia to emphasize the role of regional channels in light of the development of various international satellites.

Under the agreement, Egypt will be entitled to the best use of Arabsat to ensure continuous transmission via this satellite.

Al-Sharif called for studies to begin on second-generation satellites and noted the Arab organization's precision and cooperation in establishing firm bases for Arab information. He said that the signing of the agreement at the canal's radio and television center demonstrates its role in regional development as one component of Egyptian media.

'Abd-al-Qadir Ji'ayri spoke at the ceremony, praising Egypt's great role in utilizing all modern facilities to boost Arab media.

**6th Television Channel To Begin in Tanta**

NC2104135192 Cairo MENA in Arabic 0729 GMT  
21 Apr 92

[Text] Tanta, 21 Apr (MENA)—A sixth television channel will start in the city of Tanta, covering an area of nine feddans [approximately 9.34 acres] and costing 255 million Egyptian pounds.

This statement was made by Counselor Mahir al-Jundi, governor of al-Gharbiyah Governorate. He said Tanta was chosen as the channel headquarters because it is the capital of the central delta sector which includes al-Gharbiyah, Kafr al-Shaykh, al-Daqahliyah, and Damietta Governorates.

## INDIA

**Aims in Remote Sensing Technology Cited**

92WT0150A Madras INDIAN EXPRESS in English  
3 Mar 92 p 5

[Unattributed article: "Focus on Improving Spatial Resolution in Remote Sensing Technology"]

[Text] Madras—Remote sensing technology in the country will focus on improving spatial resolution of the Indian Remote Sensing (IRS) satellites, thereby improving the quality and detail of images obtained by them.

The objective is to achieve a resolution of 23 metres and less than 10 metres on IRS 1C and 1D to be launched by 1995, as compared to the present 30 and 70 metres of IRS 1B, thus putting them on par with LANDSAT, SPOT, and other contemporary international remote sensing satellites.

Delivering the IETE-Solidaire endowment lecture on "Evolution of space based remote sensing in India" in the City on Monday, Indian Space Research Organisation (ISRO) Satellite Centre Director Dr. K. Kasturi Rangan outlined the history of remote sensing—from balloon based aerial photography and carrier pigeons with cameras attached to their breasts to the first spacecraft to have photographed the earth more than three decades ago, the Mercury 8.

India launched its space-based remote sensing efforts in 1979 when Bhaskara was used as an intermediate satellite with a resolution as low as 1,000 metres to enable the country's scientists to learn from its experiences and acquire capability to design an integrated remote sensing satellite.

Explaining the reasons for India having opted for this technology, Dr. Kasturi Rangan said: "We did not view it as a technical bonanza but as an aid in development and in tapping this country's vast natural resources." Besides, space based observations offered the advantages of providing a synoptic view of large areas, enabled repetitive observations of dynamic processes such as flood mapping, made available images of inaccessible areas and obviated problems of normalising the data.

The national remote sensing programme had progressed very well so far and as many as 146 districts in the country had been completely mapped for wasteland identification and classification. Over 160 villages in drought-prone areas had successfully had their ground water potential demarcated. A pilot project was also under way for drought proofing Anantapur district in Andhra Pradesh, using a rainwater harvesting model developed at the National Remote Sensing Agency.

Detailing plans for future application of remote sensing in the country, the ISRO scientist said microwave based remote sensing satellites were planned at the turn of the



century when IRS 2 series was due. These satellites would operate using their own sources of radiation, thereby giving them all-weather operational efficiency and 24-hour visibility besides enhancing both spatial and spectral resolution and offering higher repetitivity. These satellites would be used for study of crop yield and stress, small area crops, pests and disease surveillance, mineral targetting, estimation of fishery potential, environmental impact and pollution monitoring, forest volume and species study, digital terrain modelling, biomass estimation, soil moisture and groundwater modelling.

Dr. Kasturi Rangan urged the industry and educational institutions to closely collaborate in these efforts by providing both technological back-up to meet user needs and the trained manpower required to operate the fast expanding programme.

#### **Telecom Sector Fails To Fulfill Targets**

92WT0148A Bombay THE TIMES OF INDIA in English 29 Feb 92 p 18

[Unattributed article: "Telecom Sector Misses Targets"]

[Text] New Delhi, February 28: Although the economic survey has described the performance of the telecommunications sector during 1990-91 as "good", the performance thereafter in the period April-December 1991 has generally missed the targets set in every area save one.

The number of net telephone switching capacity added during this period was 3.26 lakh lines. Although this figure is over a 90 percent improvement over the 1.71 lakh lines added in the same period last year, it is only 64.2 percent of the target for this period.

It is a similar case with Direct Exchange Lines (DELs). The total lines provided during the period, 2.78 lakh, is 59 percent higher than the previous year, but still 3.8 percent less than the target.

During the same period, Indian Telephone Industries (ITI) produced 5.73 lakh lines of switching equipment, up 9.4 percent over the previous year, but still fell short of the target by 0.5 percent.

In its effort to take telecommunications to the rural areas, 1,122 exchanges were opened in the rural areas, a 209.9 percent improvement over the 362 exchanges opened in the corresponding period last year. But obviously this seemingly fantastic growth has not been good enough as the figure is a good 37.7 percent lower than the target.

The only area where the target has been exceeded is in the laying of cables. Cables were laid over 55.9 lakh conductor kilometres (lckms) during the period against 49.4 lckms in the previous year. This performance is 41.8 percent higher than the target for the year.

As for the performance during 1990-91, the survey shows that there has been 16.8 percent increase in the number

of DELs over the previous year's figure of 4.16 lakh lines. But there is still a very long waiting list for telephone lines. On March 31, 1991, this number stood at 19.15 lakh, but shot up to 23.55 lakh as on December 31, 1991.

However, there is one area where the demand has actually come down. The number of telex connections provided during the year was 30 percent less than the connections provided in 1989-90.

This is in spite of a 101.1 percent increase in the telex switching capacity. This is a clear indication of an increasing reliance on fax service.

### **IRAN**

#### **Semnan Voice and Vision Gets Satellite Dish**

92AS0786Z Tehran SALAM in Persian 11 Mar 92 p 15

[Report by SALAM correspondent]

[Text] Semnan—The first satellite receptor for the Semnan Central Voice and Vision Station was put into service yesterday morning in the presence of the governor general and officials of this center. This receptor, which can directly receive programs from networks 1 and 2, will have a beneficial effect in raising the quality of the Voice and Vision in Semnan Province. Likewise, with the utilization of this receptor a reserve communications line will be created for the Semnan Central Voice and Vision Station, and technical problems in broadcasting the national programs of the Voice and Vision will be minimized. This receptor was installed by the repair and maintenance unit for the Tehran district television transmitters.

#### **2 Communications Offices Operational in Fars**

92AS0747F Tehran SALAM in Persian 1 Mar 92 p 11

[News report by SALAM correspondent]

[Text] Shiraz—The opening ceremony for a 100-number telephone center for Nobandgan and a communications office in Harem, suburb of Fasa, took place with the participation of the Imam Jumay of Fasa [chief cleric for friday prayers and ceremonies], the superintendent of the department of communications of Fars, the governor of Fasa, military and administrative officials, and a number of spectators. The report also states that a 100-number Nobandagan telephone center is under construction at a cost of 8.4 million rials; it is 4,000 square meters by 135 square meters and will have 2 FX lines which will shortly be converted to a digital 256 number system with its own special code.

A communications office in Harem covering 3,000 square meters by 65 square meters built at a cost of approximately 1.200 million rials was also operating with 1 FX line. At a press interview, Barader Qambari, head of the Fasa department of communications, said

that with the help of the facilities provided by the authorities and the people, and with the opportunities for the expansion of communications in the near future, communications centers in Farshukuye Fasa and Shishdeh Fasa, each a 250-number facility, all facilities would be started and put into operation in the near future.

At the conclusion of the opening ceremonies, the superintendent in chief of the communications department of the province of Fars and the Imam Jumaye of Fasa spoke about the installation of service centers for the people and said that the first priority of the government was to create service centers for the people and to bring about cooperation among the people, officials, and departments in order to alleviate shortcomings and problems. Service to the people, especially to the deprived segment, was part of that priority.

#### **Digital Telephone Center Operational in Hamadan**

92AS0747G Tehran SALAM in Persian 29 Feb 92 p 11

[News report by SALAM correspondent]

[Text] Hamadan—In an opening ceremony in which the participants were Engineer Gharazi, the minister of post, telegraph, and telephone; Emam-e Jumaye [chief cleric for Friday prayers] and the representative of Waliye Faqih in Hamadan; the governor; deputies of the governor's office; the South Korean ambassador to Iran; and South Korea's deputy minister of communications, the second digital 20,000 number telephone center in Hamadan was put into operation. The opening ceremony took place 18 months after the signing of the contract. The new center will add 10,000 new telephone numbers and convert 10,000 existing telephone numbers to the digital system.

The total credits for expenditure on the project amounted to 10 billion rials and were disbursed by the credit section of the Ministry of Economy and Finance. The new system will allow four telephone subscribers to converse simultaneously and also allow information transfer and fast contact between two computers.

Gharazi also opened a 400-number center in Malayer's Samen District and a 1,500 number center in Asadabad township. Thursday morning, a seminar on digital systems was held in the auditorium of Bouali Sina University in which Gharazi, those traveling with him, and a number of the province officials took part. Karampur, director general of communications in Hamadan, spoke first and said that currently, 62,428 telephone numbers were in operation throughout the province which was an increase of 48,428 compared to the year 1357 [as published]. He added that intercity circuits had also increased from 274 in 1357 to 2,060 at present.

An expert from the communications company explained and compared the new system's applications and noted that by utilizing the new fiber-optic technology and by

using a pair of optic wires instead of a pair of copper wires, it was possible to transmit on 7,607 communications channels. He added that the country was self sufficient in the production of fiber optics and the future projection for communications was nine circuits to 100 users by the year 1372. He estimated the present telephone permeation factor to be 4.5 circuits to every 100 user.

In the course of the seminar, Dr. Park, South Korea's deputy minister of communications, referred to the cooperation between Iran and South Korea in the field of communications by saying, "I consider the center's opening a great accomplishment for two Asian countries; experts from the two countries exchanged ideas and were able, without utilizing technology from a third country and relying solely on the resources of the two countries, to complete the project in a short period of time." He added: "Forty-four Iranian and Hamadani experts have acquired the necessary training and we are ready for mutual cooperation especially in the field of communications and information." He said, "Iran and South Korea have many things in common; as the result of disastrous wars, both countries suffered economic stagnation and many hardships; their industry and agriculture was decimated. Now that our country has overcome the hardships of war, cooperation between the two countries and the utilization of mutual experiences will be important and constructive. Since our country has experienced the tragedies of war, we can understand the special situation of your country. I hope that the close cooperation and relations between the two countries will remain stable and permanent." At the conclusion of the seminar, Gharazi commended the services rendered by the Iranian and foreign experts in putting the system into operation and said, "The expansion of the nation's communications network saves time, expense, and energy and it is not a mere recreational and elitist facility. We believe that all transportation facilities in the country perform communication services and the telephone is an inexpensive medium which reduces these physical contacts to the minimum."

#### **Digital Telephone Centers Inaugurated in Shiraz**

92WT0137B Tehran ETTELA'AT in Persian 16 Feb 92 p 2

[Text] Social Service—Two digital telephone centers with a capacity of 40,000 telephone numbers were put into service yesterday on the occasion of the anniversary of the triumph of the Islamic revolution in the presence of Engineer Gharazi, minister of post, telegraph, and telephone.

The 20,000-number digital telephone center with 125 incoming channels and 65 outgoing channels was put into service. This center was built on a 5,000-square-meter site with a foundation of 2,000 square meters at a construction cost of 250 million rials and at a cost of 1,200 million rials for the center.

The 20,000-number Vali 'Asr (may God hasten his joyful advent) center, with 10,000 numbers, was placed into service yesterday. It has the same number of incoming and outgoing lines as the Shahid Fayaz Bakhsh center, and the cost of building the center was 1,200 million rials.

### 3 Telephone Centers Inaugurated in Tabriz

92WT0137A Tehran ETTELA'AT in Persian 12 Feb 92  
p 13

[Text] Social Service—Three telephone centers with a capacity of 60,000 telephone numbers and an installation cost of more than 2.1 billion rials were put into service in Tabriz during the joyous days of Dahe-ye Fajr of the Islamic revolution in the presence of Engineer Gharazi, minister of post, telegraph, and telephone.

Our mobile correspondent reports that throughout his trip to the province of East Azarbaijan, while inaugurating new telephone centers in the city of Tabriz, Engineer Gharazi held separate meetings with Shamil Musayof, minister of communications and Qarayof, parliamentary deputy of the Republic of Azarbaijan, in which they discussed and exchanged views concerning the expansion of mutual relations and cooperation in communications matters.

During the opening of one of the telephone centers in Tabriz, Engineer Gharazi, minister of post, telegraph, and telephone, gave a talk concerning the nation's telephone activities. He said: With the opening of telephone resources in the deprived areas, the provision of intercity and international resources and the use of satellite communications, striking progress has now been made in all areas, so that in the year 1357 [21 March 1978-20 March 1979], there were 312 villages with telephone service in the nation, while at the end of the month of Azar this year [21 December 1991] the number of villages with telephone service had reached 4,616.

Concerning the assignment of telephones in the cities, he said: In the year 1357 there were 1,165,677 installed telephones and 850,800 working telephone numbers, while at the end of the month of Azar this year there were 2,692,756 installed telephones and 2,321,529 working telephones.

The minister of post, telegraph, and telephone then detailed the extent of telephone resources in the province of East Azarbaijan. He said: Before the revolution there were 14 villages in this province with telephone service, but by the end of the month of Azar this year more than 540 villages in the province had telephone service.

He added: In the year 1372 [21 March 1993-20 March 1994] 1,552 villages in this province will have telephone service.

Engineer Gharazi discussed the extraordinary increase in installed telephones in the province of East Azarbaijan. He said: While before the Islamic revolution the

total installed telephones in this province was 58,000 telephone numbers, this year this number increased to more than 178,000 telephone numbers.

The minister of post, telegraph, and telephone emphasized the special place of the province of East Azarbaijan in the nation's telephone service expansion program. He said: At the end of the National Economic and Social Development Plan, when the number of assigned telephones from the telephone company will have reached 6 million numbers, the share of the province of East Azarbaijan in this total will be 400,000 numbers, of which 200,000 will be connected in Tabriz.

He added: Currently 120,000 telephone numbers have been assigned in Tabriz, and the rest will be assigned in the next two years.

Engineer Gharazi also discussed postal services. He said: Mail delivery time, which used to be 120 hours, has now been reduced to 50 hours.

In conclusion, he discussed the time of putting into operation the Islamic Republic of Iran's special satellite. He said: In the last two years the necessary designs have been made, and more than 50 percent of the work in this area has been completed. If the credits are opened, the remainder of the work will be done soon.

It is to be noted that the Tabriz Telephone Centers, with the names Aburayhan, Bahar, and Vali 'Asr were all put into service in ceremonies attended by the minister of post, telegraph, and telephone, the governor general of the province of East Azarbaijan, the Majles deputy from this province, officials and directors of government organizations, and the zealous people of the municipality of Tabriz. Based on the same report, a post office in Moragheh and a telephone center in the district of Basmenj were also put into service.

### Thousands of Telephone Numbers To Be Assigned

92AS0747K Tehran SALAM in Persian 23 Feb 92 p 2

[Text] In accordance with the objectives of the government's five-year economic, social, and education promotion plan, 500,000 new telephone numbers will be assigned next year to those who have requested them. Engineer Gharazi, minister of post, telegraph, and telephone, who is visiting Zahedan, made this statement in an interview with the correspondent of the Islamic republic news agency yesterday, Saturday afternoon; he added that until the end of the year 1372, the number of telephones in the country would reach 5 million.

In regard to the plans of the Ministry of Post, Telegraph and Telephone, Engineer Gharazi said that the government's second five-year plan projected an increase in the number of telephones in the country to 12 million. He added that priority would be given to those rural areas which cooperated in preparing the groundwork and

construction and that the communications department was lucky in having such cooperation in the installation of telephone connections.

In regard to the operation of ground satellite stations, the minister said that up to the present, seven such stations had been put into operation and 10 others are scheduled to begin operating; their cost in foreign exchange was 5 million dollars. Engineer Gharazi said that plans for extending postal services were being put into effect and that at the present time, the nation's postal network was capable of handling 1 billion pieces of mail.

### **First Satellite Receiver in Semnan Operational**

92AS0808Z Tehran JOMHURI-YE ESLAMI in Persian  
16 Mar 92 p 4

[Report by JOMHURI-YE ESLAMI correspondent]

[Text] Semnan—In ceremonies attended by the governor general of Semnan, the first satellite receiver for the Semnan Central Voice and Visage Station was put into service yesterday morning.

This receiver, which can receive programs directly from networks one and two, will have a beneficial effect in raising the quality of the Voice and Visage Station in Semnan Province.

Likewise, with the utilization of this receiver a reserve communications line will be created for the Semnan Central Voice and Visage Station, and technical problems in broadcasting the national programs of Voice and Visage will be minimized. This receiver was installed and put into service by the repair and maintenance unit for the Tehran district television transmitters.

## **IRAQ**

### **Rebel Radio Announces New Kurdish Station**

NC1004180892 (Clandestine) Voice of the People of Kurdistan in Arabic 1600 GMT 10 Apr 92

[Text] The Voice of the People of Kurdistan's technical cadre have—with outstanding success and modest capabilities—completed a difficult task of several months and have opened a new 10 kw radio station.

With this great accomplishment, a new wavelength is added to the two operating wavelengths of 41 and 75 meterband. The new radio initiated transmitting regular programs on 49 meterband today, 10 April, the anniversary of the assassination of Engineer 'Abd-al- Khaliq Ma'ruf, the founder of the September Revolution Radio station, by the regime's agents.

## **PAKISTAN**

### **Computer-Based Electronic Network Established**

92WT0142A Karachi DAWN in English 4 Mar 92 p 10

[Text] The first-ever computer-based electronic network from Pakistan has recently been established from H.E.J. Research Institute of Chemistry with the rest of the world. With this network link Pakistan has become the newest member of a 51-nation network club whose members are linked with each other through electronic networks.

The Federal Minister of Education, Mr. Syed Fakhr Imam, will formally inaugurate this first computer-based International academic network of Pakistan on Wednesday (4 March) at H.E.J. Research Institute of Chemistry, University of Karachi.

H.E.J. Research Institute of Chemistry, which is the largest academic research Institute in Pakistan, has again taken a lead in acquiring this most modern method of communication. The Institute has recently been accepted as a member of UUNET (Unix to Unix Network) and EARN (European Academic and Research Network).

The effort for a network link was started four years ago by Prof. Attaur-Rahman, Director, H.E.J. Research Institute of Chemistry and Dr. M. Iqbal Choudhary. A large number of financial and technical difficulties were overcome with the help of generous donations and technical support of PSANA (Pakistan Students Association of North America), IBM (Pakistan), Jaffer Brothers (Digital) and Instaphone (Pakistan).

IBM donated and installed a PS2 computer system for the network link. Jaffer Brothers gifted a high memory computer with graphic and printing devices for scientific information retrieval through the network. The electronic link was established through a cellular telephone provided by Instaphone.

Pakistan Students Association of North America (PSANA) arranged the donation of a Telebit trailblazer modem through a fund raising campaign in the United States of America. Another similar modem was gifted by Mr. Irfan Ahmad of New York. Dr. Hasan H. Rizvi of CERN, Geneva, provided technical support for the project. A network support fund has been established to cover the costs of scientific information transfer and on-line literature search.

As a second step, a project proposal in the form of PC-1 has been submitted to the Ministry of Education to link all major universities of Pakistan through a national scientific network. This national network will also be connected to international networks and databases through H.E.J. Research Institute of Chemistry, University of Karachi.

## REGIONAL AFFAIRS

### JESSI HDTV Development Program Launched

92MI0331Z Bonn *TECHNOLOGIE-NACHRICHTEN*  
*MANAGEMENT-INFORMATIONEN* in German  
18 Feb 92 pp 7-8

[Text] The "high-definition television" (HDTV) application project forming part of the EUREKA [European Research Coordination Agency] JESSI [Joint European Submicron Silicon Initiative] project has now been launched. This JESSI "flagship" includes development work that will create the circuits with state-of-the-art semiconductor technology required for the television of the future. Test methods for microelectronic circuits and systems of this kind are also being developed. Ten firms from Germany, France, the Netherlands, Britain, and Belgium are involved in this work, the total costs of which amount to around 230 million German marks [DM] for the period 1992-94, about a quarter of which are for Germany's account. The Federal Minister of Research and Technology (BMFT) is contributing around DM30 million to the cost of the requisite standardization work.

The major features of high-definition TV are sharper, clearer, and larger pictures, with considerably improved sound quality, the criteria for this ambitious development being the quality of 35-mm cinema film and compact disc sound.

HDTV therefore constitutes the next stage in TV innovation, to which enormous market expectations are attached. The JESSI project is designed to create a system architecture in the form of a set of integrated circuits for an HDTV receiver based on the European HDTV standard, as defined in the EUREKA HDTV (EU 95) project. Owing to the high demands for complexity and speed set by the processors that have been developed, the prototypes built for this project set the pace for further integrated circuit developments in the consumer sector.

This project is supported by parallel circuit design technique developments focusing primarily on the testing of methods whereby complete new circuits can be rapidly inspected to ensure that they meet the specifications to which they were designed. European standardization of test methods will thus make system design more independent of individual production processes.

Achieving high-definition TV also constitutes a major technological challenge, and it is only progress in microelectronics that makes it possible to translate complex technical systems into consumer electronics products. HDTV receivers require a number of highly complex integrated circuits, which modern microelectronics makes it possible to produce economically.

Owing to the large production runs required in the consumer electronics sector, the mass market that HDTV will generate will bring a massive demand for state-of-the-art circuits. This boost in demand will have

major consequences for the European microelectronics industry, which aims to develop a powerful European microelectronics base through the JESSI project so as to ensure unrestricted access for chip users.

### German, British Cooperate on Fiber-Optic Systems

92MI0322Z Stuttgart *LASER & OPTOELEKTRONIK*  
in German Feb 92 p 8

[Text] British Telecom and German Telekom have launched a joint project scheduled to run until Spring 1993 to devise viable specifications and proposals for standardizing fiber-to-the-loop fiber-optic line systems. Their aim is to provide potential suppliers with a large, readily identifiable market, thus bringing about price reductions for major system components. BT and Telekom are currently collecting the information that they need to draw up a comparative survey of the requirements made of fiber optic systems. Successful collaboration would be of particular benefit to Telekom in the new laender, where optical fiber technology will be used in the near future to install a modern infrastructure capable of meeting future needs.

### European Operators Embark on Videophone Project

92WS0444M Chichester *INTERNATIONAL*  
*TELECOMMUNICATIONS INTELLIGENCE*  
in English 24 Feb 92 p 3

[Unattributed article: "Operators Embark on Videophone Experiment Project"]

[Text] Following six months of preliminary testing by operators' laboratories, France Telecom, BT, Deutsche Bundespost Telekom, Norwegian Telecom, PTT Telecom Netherlands and SIP of Italy, have begun installation of an experimental European videophone service for business use as part of EVE-2, the European Videophone Experiment project.

According to France Telecom, the project marks the first time that companies with ISDN links in these six European countries will be able to use videophone services and terminals in a real business environment.

The project, which will involve installation of 50 terminals in each of the six countries, is aimed at providing a real-life verification of European ISDN videophone service criteria using such CCITT standards as H261, says France Telecom.

As preliminary tests draw to a close, the six companies are lining up representative test customers and seeking corporations with major communications needs.

In France, 50 terminals, supplied by Matra Communication and SAT, will be installed at test customers in the near future, says France Telecom, allowing them to use videophone communications.

## CYPRUS

**House Passes Law on Operating TV Stations**

NC1704112492 Nicosia Cyprus Broadcasting Corporation Radio Network in Greek 1600 GMT 16 Apr 92

[Text] At its regular meeting today, the House of Representatives passed a law on establishing, installing, and operating television stations. Based on the law, the Consultative Committee will advise the authority responsible on revoking or amending licenses, not just granting or renewing licenses issued by the Ministerial Council.

The law prohibits companies and individuals who are relatives to the third degree [not further specified] acquiring more than 25 percent of a television station's shares. The parties will receive equal treatment under current regulations which apply to the Cyprus Broadcasting Corporation [CyBC] and the advertising code will not include provisions that are less favorable to private stations than to CyBC.

## FRANCE

**Thomson's HDTV Sacrifices Quality for 16/9 Format**

92WS0371A Paris LE MONDE in French 19 Feb 92 p 20

[Text] While France is rebroadcasting its first public high-definition television [HDTV] images, the French group Thomson is getting ready to expand its line of Cinemascope screens. Cinemascope screens follow the 16/9 format, rather than the current 4/3 one. Thomson launched the costly Space System, which measures 93 cm across diagonally, for 35,000 French francs [Fr] in February of 1990. In March it will market a new 83 cm set for less than Fr20,000.

Distributors such as GITEM, FNAC, and Darty have already ordered 500 of them. In early November Thomson will bring out an even smaller, 70 cm set for less than Fr12,000. All the new sets have one drawback: Unlike the Space System, they will never be able to receive high-definition broadcasts when the HD-MAC [high-definition multiplexed analog component] decoders come out. In fact, Thomson intends to make the most of the new 16/9 format, which it has priced modestly, at the expense of better picture quality. The company also argues that high-definition broadcasts shown on sets smaller than 93 cm offer no perceptible improvement in picture quality. Is that really so?

**HDTV Transmission Standard To Be Selected**

92WS0386A Paris LE MONDE in French 28 Feb 92 p 15

[Article by Michel Colonna D'Istria and Pierre-Angel Gay: "Prime Minister Must Decide Telecom-2A Satellite Transmission Standard—A Confrontation Between Canal Plus and European Electronics Industrialists"]

[Text] Prime Minister Edith Cresson must soon decide the standard on which public satellite Telecom 2A will base its transmissions—D2-MAC [Definition 2 multiplexed analog component] or SECAM [European line-sequential system]—and implicitly, on which method of coding—Eurocrypt or Syster. The decision is an important one, in that it will condition durably the economic viability in France of the new D2-MAC standard developed by the two big European consumer electronics groups: Philips and Thomson.

No holds are being barred. Nor are any of the arguments that are being advanced, publicly and in the corridors, to convince the government to adopt the "right" transmission standard for the Telecom 2A French satellite, which recently passed its first test with flying colors, when it succeeded in relaying the Olympic Games from Albertville in HD-MAC [high-definition multiplexed analog component], the European HD standard (LE MONDE, 22 February). Seven thematic channels (movies, sports, children's...) are awaiting only the putting of this satellite into commercial service, to fully capture half of the French public, which will not be wired for cable service before the end of the century. These will be pay-per-view channels. They will therefore be encrypted as is Canal Plus, and will thus require use of a decoder.

Around the beginning of March, the government is to issue an interministerial decree setting forth the transmission standard for the new satellite. Will it be D2-MAC, the standard that enables a new screen format—the 16/9—recalling that of cinemascope; multiple language channels; and a better quality of image; and that prepares the way for the advent of the HD-MAC wide screen? Or will it be the good old "4-tiered" SECAM—in use now for several decades in French households—enhanced, for the new purpose, with the Syster encoding system developed by Canal Plus?

Choice of the D2-MAC 16/9 standard implies a bet on the future and the adoption of a new technology by the public, entailing, for the moment, the purchase of a new and costly television set (currently over 20,000 francs [Fr]). Choice of SECAM implies—at least initially—opting for the present and facilitating the reception and hence the development of satellite channels. Two opposite strategies laden with consequences for the television viewers, the electronics manufacturers, and the television industry as such. Two strategies whose advocates militate actively in the media and the corridors of government, exacerbating the tensions. The CEO of Canal Plus, Mr. Andre Rousselet, threatens now to not

use Telecom 2A for his channel, "nor, probably, the other thematic channels in which we are involved," if D2-MAC is chosen. "I doubt that there will be many other candidates," he adds, in order to add weight to his stand. Mr. Rousselet, who was long an ardent promoter of the new European standard, denies a total reversal of his previous stand on the issue. Did he not state in LE MONDE of 11 December 1991 his belief in the D2-MAC 16/9 standard but... on other satellites: The TDF1-TDF2, whose success is uncertain and that are to be followed by the Europesat satellites, which are still in the planning stage?

In the view of Canal Plus's CEO, the virtual absence—and the price—of 16/9-format TV sets, imposes, for the moment, 4/3-format broadcasts. And commercial reasons preclude the mixing of the two formats on a single channel. Under these conditions, says Mr. Rousselet, compulsory use of the new D2-MAC standard on Telecom 2A would entail more of a handicap than an advantage: It would require more costly decoders, without inducing the sale of a single additional TV set. Neither the end-user nor the manufacturers would benefit from it. Hence, hurrah for SECAM. And since these would be pay-per-view channels, hurrah for Syster.

The manufacturers take an opposite view. Not only, they say, is D2-MAC in association with the Eurocrypt encryption system—which has been standardized and is open to all operating entities—already a reality in Europe with the Scandinavian market's 200,000 decoders, but the existence of channels being broadcast in the new standard format, and the forthcoming availability on the market of cheaper 16/9 TV sets—at less than Fr15,000—augur well for the outlook. Far from cutting the French market away from the rest of Europe, choice of this standard on Telecom 2A would confer on it a decisive advantage. It would also dovetail with the strategy of industrial groups that are prepared to invest Fr20 billion in the development of HDTV [high-definition television] under the European Eureka program.

#### **'Mr. Rousselet's Monopoly'**

"Adoption of SECAM, however," says a manufacturer who prefers to remain anonymous, "would press 3 million then 5 million French households into equipping their sets with Syster decoders that have been developed by and would remain the property of Canal Plus. That would further confirm Mr. Rousselet's monopoly. Economic viability would be categorically denied to any other pay-per-view channel in France. The question, therefore, is whether the government really can put an end to the current situation. It would be scandalous were a private company to be accorded possession of a parcel of the public domain enabling it to arrogate to itself a private monopoly."

SIMAVELEC, the electronics industry association, cites "the imperious need" of "freedom to compete for the products and services of pay-per-view television." Mr. Pierre Steenbrink, head of the French Philips company,

also uses the term "monopoly" and says, with reference to industrial policy, that "France has before it the making of a historic decision."

The manufacturers also see the forthcoming decision on Telecom 2A a clear test of the government's real intent. In the name of the policy that has consistently been followed by the government and by Europe since 1986. In the name of the billions that have been spent in public funds. They are fearful of the domino effect of a possible slip-up: No D2-MAC in France, no D2-MAC in Europe, hence no HD MAC, and thus an outright capitulation to Japan and the United States, which are closely guarding the results of their research on HDTV.

As proof of its good intentions, Canal Plus is offering to open its Syster to anyone who wishes to launch a pay-per-view channel; to participate in specific programs in the 16/9 format, to be broadcast in parallel with thematic channels; and, eventually, to change the decoders of those of its subscribers who may prefer to adopt D2-MAC. In this way, Canal Plus would be hewing to the spirit of the European directive in the process of being drawn up (LE MONDE of 21 December 1991). This "minimal" directive does not compel broadcasting on D2-MAC prior to 1995.

In this context, Canal Plus does not want a standard that is not yet even a European standard to be suddenly imposed on it. The security of its clients and stockholders precludes it from assuming the risk of a possible future abandonment of D2-MAC, whose future is being threatened by the advance of the German PAL Plus, if it delays too long, and by the American digital standard, which is expected to be defined by the end of 1993. Seen in this light, betting everything on D2-MAC would be a mistake of the same order of magnitude as the building of an industrial Maginot Line.

It is perhaps around this view of the risk involved that a compromise between the two positions can be structured, such as would avoid a situation of gridlock: Subsidization of the broadcasting of programs in the 16/9 format, absorption of the possible excess cost of the decoders, reciprocal commitments to continued utilization of satellite channels. The Prime Ministry has asked all the ministries involved to submit their positions in writing. Given their past positions, it is hard to imagine one of them arguing against the D2-MAC standard. But each one is being careful to respond for its own, and solely its own sector. It is now up to the prime minister, who has shown her keen interest in industrial questions, to referee this one.

#### **Telecommunications Firms Face Market Changes**

92WS0399B Paris L'USINE NOUVELLE in French  
27 Feb 92 p 30

[Article by Jean-Pierre Jolivet: "Manufacturers Jolted by Consumers' Demand for Telecommunication Sets"—first paragraph is L'USINE NOUVELLE introduction]



[Text] With innovations, design, and low prices now the norm, telecommunications manufacturers can no longer sell to administrations or companies. They have to seduce consumers.

Telephone sets are being sold in blister packs; faxes are going for under 3,000 French francs [Fr]. Cordless phones will soon be marketed for less than Fr800, while radiotelephones for under Fr5,000 are around the corner. Telecommunications sets are becoming a consumer product. And their manufacturers are making a not entirely painless adjustment to a new line of work.

The industry is undergoing a change. Design sells. The speed at which products are being replaced is accelerating, technical innovation is moving ahead at a gallop, and selling prices are collapsing. Manufacturers must amortize shorter production runs more quickly, and production costs must be "stretched" to the utmost.

The new game will significantly affect French manufacturers, who are more accustomed to public and professional markets. Alcatel, which ranks first in Europe and second in the world, still sells 75 percent of its handsets to public carriers, half of them in France. But things are changing rapidly. "The carriers' 'products' policy is changing. By next year, they will make European manufacturers compete with the Asians and Americans," predicts Philippe Glotin, vice-president of the Consumer Products Division of Alcatel Business Systems. At the same time, the diversity of demand is fragmenting the market horribly. The challenge to the industry is so great that, before it created a "consumer" division, Pierre Suard's group wondered whether it should stay in the business.

Although the manufacturers' challenge is commercial, it is first and foremost technological and industrial. The cost of developing a product has increased tenfold within a few years. Innovation has become indispensable—starting with innovation in designs. "We are seeing more and more purchases based on 'love at first sight.' It is true even in small businesses, where it is the boss who selects the phone sets. He will let himself be guided by design, ergonomics, and functions," explains Laurent Cuvelier, who is the marketing director of Barphone.

Barphone specializes in small business needs, and uses human engineers and a designer who works with the Japanese. Alcatel has created "focus groups" of European users, who consider future esthetic trends. In fact, a recent Alcatel study shows that telephones are selected first for their ergonomic value (26 percent), ahead of price (23 percent). Matra Communication has a team of designers who work in close collaboration with the technical design and production teams.

#### Modular Product Designs

The "hip" look of handsets is raising new technological problems. Matra Communication's Crystal phone, which is set in a translucent block of acrylic crystal, required some original solutions. The handset's line plug

is magnetic, and the electrical connections are made by incorporating silver-coated wires along the length of the set. The rounded shape of the new Solaris phone forced Barphone engineers to opt for a single electronic board twisted to fit. Such a design would never have been possible without surface-mounted components.

Handset manufacturers must now take into account the innovations race born of competition. Innovations also sell phones. Particularly innovations that involve more functions, such as voice amplification, dialing without picking up the phone, answering machines, call date and time display, and the use of scrolling menus and icons on future flat-screen phones. "All that means software and new development costs for manufacturers," comments Laurent Cuvelier.

The only economically feasible approach is to use technological "building blocks," which enable manufacturers to turn out sets virtually on demand. Each block represents a function. Alcatel has reduced the number of its products from 280 to 60 in two years by using them. And next year, the company will have only four internationally marketed set lines.

Another big challenge is to revamp production facilities. "A factory that makes fewer than three million sets a year is not profitable," says Philippe Glotin. That makes the rapid changes in products and the increasing number of functions (options) new hurdles for manufacturers. "The S63 handset—the famous 'little gray phone' of the 60s—had a product life of 20 years. Today telephone sets are only marketed for a few years; tomorrow, we will be counting in months," explains Michel Salaun, who is Matra Communication's assistant director of manufacturing operations. Production runs will be clipped accordingly. The Douarnenez factory used to make three million S63s a year. It now puts out four million, but with 80 to 100 references on 12 types of sets.

Automation and the installation of flexible production lines have not come close to solving all the problems, even though they have reduced manufacturing time by 20 percent a year. Instead, manufacturers have found modular set design and rationalization to be the solution. Alcatel's Consumer Products Division has reduced its component references from 6,000 to 600.

That leaves the low end of the handset market. The modest selling price of the phones leaves manufacturers no choice but to shift production elsewhere. Many companies are thinking about doing so, especially since the supply sources for the components are located in Southeast Asia. To win the telephone war, telecommunications manufacturers must adapt to the demands of the consumer electronics industry—particularly as the big manufacturers in that industry are now their most serious rivals.



### France Telecom, DBP To Compete With Syncordia

92WT0128A Paris *LIBERATION* in French 12 Mar 92  
p 14

[Article by Paul Loubiere: "Paris-Bonn Connection Irks English"—first paragraph is *LIBERATION* introduction]

[Text] France Telecom and its German counterpart are going to create a joint company, Eunetcom, to offer business services in the field of value-added telecommunications. The French are thus scoring points on their rival, BT....

When it comes to telecommunications, the Paris-Bonn axis is getting stronger. France Telecom and the Bundespost have just signed an agreement to create a new joint company called Eunetcom. On the surface, it is a bland agreement, the kind international telecommunications operators sign every day. But in reality, this cooperation agreement is mainly aimed at curbing the appetite of their big European rival, Britain's BT (formerly British Telecom).

Specifically, France Telecom and Deutsche Bundespost [DBP] Telekom have signed a far-reaching framework-agreement to create a joint company that would offer a broad gamut of services to international companies. The two companies will hold equal shares in this company, which should be formed within the next three months under the name Eunetcom (short for European Network Communication). Its mission will be to maintain and operate international telecommunications networks and to provide "coordinated services in the field of European and global data transmission networks," according to a communique.

Such a claim is very significant. It means Eunetcom is actually a rival of Syncordia, a company established last September on BT's initiative. At the time, the English operator wanted to go into partnership with Japan's NTT and DBP Telekom, each of which would be allowed a 26 percent share. BT, holding onto 48 percent, would take the biggest market, North America, leaving Europe to the Germans and Asia to the Japanese. But the two operators did not relish the idea of subsisting on crumbs from BT's table, and they have not yet bought any shares. France Telecom for its part is waging an intense campaign to get a position in Syncordia, but BT is opposed.

France Telecom and DBP Telekom agreed Eunetcom may "invest in entities whose vocation is similar to its own." In other words, there is nothing to prevent it from acquiring an interest in Syncordia. For France Telecom, it is another way to get a seat at the table, despite BT's opposition.

BT and France Telecom are engaged in bitter and relentless competition. The two operators are the same size (130 billion French francs [Fr] turnover for BT,

compared to Fr115 billion for its rival), but their management approach is completely different. The French firm is more or less a successful example of Colbertism, combining a vocation of public service with one of the highest productivity rates in the sector. The English firm, since it was privatized, has embarked on a policy of seeking profits at any price, to the detriment of certain technological developments seen as "not very profitable." The ideology of liberalism became the official bible of the group, which for that reason is loath to sign agreements with operators that are still in the clutches of the state. This attitude sometimes leads to ludicrous situations. Last year, for example, the BT board of directors haughtily refused to receive Marcel Roulet, president of France Telecom, while he was on a visit to London.

But relations between the German and French companies have been dandy for quite some time. The two have already been cooperating in value-added services in the joint company Eucom. The Germans came up with the idea of Eunetcom, and the French immediately saw how they could exploit it to the discomfiture of the English: They successfully insisted that the new company should be able to acquire interests in other companies. For their part, the Germans were not unhappy at getting this chance to show their independence.

The new accord strengthens their cooperation in an environment characterized by growing international competition and menacing signals coming out of Brussels, which wants to open the still largely monopolistic public telephone systems of the European community to competition. Already, the Commission intends that as of 1 January 1993 a private company will theoretically have the right to install a Europe-wide communications network. Most states are reserving the right to retain a monopoly on voice transmission. However, in other domains (data transmission and value-added services), everything will be subject to the harsh law of competition. The onset of competition obviously explains the bitterness of the struggle between operators to acquire shares of the data transmission market.

In the field of value-added services, telecommunications operators have refurbished their arsenals before going off to seek financing. Since last year, the Anglo-Saxons in particular have been running about everywhere to obtain contracts to manage big multinational networks. And also to acquire value-added services: Though the European market for such services amounted to only Fr14 billion in 1989, it is expected to be Fr35 billion this year, a 250 percent increase in three years. However, telecopying and interactive videography are still carried on telephone systems, so they are excluded from the domain of these services, which include data transmission and radio-telephone.

The economic stakes are thus colossal. Today, enterprises must manage their own international communications—a task which becomes increasingly complex as technologies advance and make it possible to transmit

voice, data and images. The volume of information exchange is growing exponentially. Enterprises that have already seen how the growth of their computer department has devoured huge quantities of money and personnel are increasingly reluctant to see a telecom department develop along the same lines. The tendency is more toward delegated management of these services, i.e. calling on an expert to manage all its informatics and telecommunications. It is precisely such services that EUNETCOM, like Syncordia, is planning to offer. Adding to the heat of the battle is the fact that local call volume is growing much less dramatically than the volume of international calls.

## GERMANY

### Philips Attempts To Market HDTV to Industry

92WS0402C Duesseldorf *HANDELSBLATT* in German  
5 Mar 92 p 16

[Text]

### BTS GmbH: High-Definition Television Technology Sold for DM100 Million

### Philips Subsidiary Wants To Sell HDTV Technology to Institutes and Industry

According to company information, the Dutch Philips group, Eindhoven, has invested several hundred million German marks [DM] in the field of high-definition television (HDTV) in recent years. This includes all expenditures for picture tube development, retooling of the Aachen plant, microelectronics, studio engineering, and new television equipment.

In order for the tremendous investment to pay off, the Philips subsidiary BTS Broadcast Television Systems GmbH (Philips: 75 percent; Bosch: 25 percent), Darmstadt, involved in the development of HDTV, is to increase sales of HDTV studio equipment. Target groups include private and public TV programmers, explained BTS spokesman Friedrich-Karl Reichardt to the *HANDELSBLATT*.

The programmers may be interested in high-definition television technology. However, up until now they have shied away from heavy investment in studio equipment for the television of tomorrow. The public broadcasters are also holding back because they see the link between the HDTV studio technology offered by BTS and the future European HDTV transmission standard HD MAC [high-definition multiplexed analog component]. They do not want to support the controversial standard—at least not officially (see *HANDELSBLATT* of 19 February 1992). BTS hopes to break the ice by training television technicians and cameramen.

No wonder that the Philips subsidiary—which employs 1,800 workers in Darmstadt [Germany], Breda [Netherlands], and Salt Lake City, Utah [USA]—is looking around for other sales markets. Reichardt has found new

customers: "Advertising agencies, universities, medical institutions and industrial enterprises." These customers are interested in high image quality. In the long term, considerably more business can be done with them than with the equipping of TV studios.

BTS is "still too little known" among this "group of customers." This area accounts for only a small part of BTS' total sales ("between 300 and 350 million German marks" in 1991). Nevertheless, the Darmstadt firm has already sold HDTV cameras, tape machines, mixers, and outside broadcasting vans worth DM100 million. About DM60 million of this amount was accounted for by the "Vision 1250" organization, which, among other things, was responsible for HDTV broadcasts of the Winter Olympic Games from Albertville. The Dutch broadcaster "D2-TV" bought studio equipment for DM30 million. And the Oberhausen HD center has placed an order.

The idea of using HDTV technology in the scientific, academic, and industrial area is not new, however. The dreaded Japanese competition has been at work for years selling its equipment to German industry. The Sony group, for example, has outfitted Ford-Werke AG, Cologne, with a high-definition video system. With it, the design of new auto models will be accelerated considerably.

## ITALY

### SIP Reports 480 Billion Lire Profits

92ES0648A Rome *LA REPUBBLICA* in Italian  
31 Mar 92 p 47

[Article by Edoardo Borriello: "Italian State-Owned Telephone Company Earns Record Profits and Launches a Microtelephone"—first four paragraphs are *LA REPUBBLICA* introduction]

[Text] Gamberale to the private companies: "Let us avoid a scuffle." Profits of about 480 billion that president Pascale will present to the stockholders meeting on 30 April.

Determined to retain its supremacy in mobile telephones, the firm that owns STET [Turin Telephone Finance Company] pulled another ace from its sleeve: the smallest, lightest, and most compact mobile telephone Italians have ever seen. It is as big as a package of cigarettes, weighs between 230 and 280 grams, permits two hours of continuous conversation, and can remain 22 hours on standby. The cost? From 1.7-2.55 million lire, value-added tax [VAT] excluded.

At the rich cellular business, four private groups are also aiming that are awaiting a green light from the Ministry of Posts and Telecommunications. They are Omnitel, which is under Olivetti; Unitel (Fiat and Berlusconi); Pronto Italia (a group of businessmen); Etra, under ENI [National Hydrocarbons Corporation] and also including Ligresti.

Who are the "maniacs" of the cellular telephone? Sixteen percent are business men, 20 percent professionals, 12 percent commercial operators, 9 percent

managers, 28 percent independent workers, 10 percent employees, 5 percent others. A great army destined to increase.

**Number of Cellular Telephone Subscribers**  
(in thousands)

1989	1990	1991	1992 (through Feb)	Estimated			
				1992	1993	1994	1995
75	275	425	550	800	1,210	1,490	1,725

Source: SIP

**Italy Third in European Ratings of Those Signed Up for Cellular Telephones**

Country	1991 Subscribers	1990 Subscribers	Percentage Change
United Kingdom	1,230,000	1,139,500	+7.9
Sweden	589,182	482,903	+22.0
Italy	567,534	265,965	+113.4
France	373,395	283,601	+31.6
Germany	532,251	273,860	+94.3
Finland	287,097	225,983	+27.0
Switzerland	174,557	125,047	+39.5
Norway	234,423	203,312	+15.3
Denmark	176,933	149,186	+18.5
Others	456,464	297,318	+53.5
<b>Total Europe</b>	<b>4,621,900</b>	<b>3,446,612</b>	<b>+34.0</b>

Record profits of close to 480 billion and billings that exceed 20,000 billion lire are the results that Ernesto Pascale, president of SIP [Italian State-owned Telephone Company], will present to the stockholders meeting on 30 April. But even before it files a golden year away, the public telephone colossus is advising the private groups concerned with the sector that it will reject the "disingenuous plundering" of its property on the part of those "Trojan-horse consortiums" in which there is a strong foreign operator.

"In telecommunications," stated chief executive officer Vito Gamberale yesterday, "village scuffles are of no use, but what is needed is a plan that will make the most of System Italy. And this is especially true with regard to mobile telephones."

Determined to retain its supremacy in the sector and making early moves, SIP yesterday pulled another ace out of its sleeve: a third-generation cellular, the most compact, the smallest, and the lightest mobile telephone that Italians have ever seen.

It is as large as a package of cigarettes, weighs between 230 and 280 grams, permits two hours of continuous conversation, and can remain 22 hours in standby status, that is, turned on and awaiting calls. This is a "jewel" offered in

three versions: the Cityman 200 at 1.7 million lire, VAT excluded (40,000 lire bimonthly fee for maintenance), the Microtac Gold, and the P4, both at 2,550,000 lire, VAT excluded (49,000 lire bimonthly fee for maintenance).

Convinced that the new telephones will be a hot item and that users will increase even more, SIP has further strengthened the base network by introducing already as of today the new area code 0336 that is to be added to the other two, 0337 and 0333. More over, by next summer users will benefit from new services: advance notice of incoming calls, switching of calls to a desired number, temporary interruption of outgoing calls, and a centralized secretariat (SIP will receive the message which will be delivered to the user as soon as the telephone is turned on).

All the premises for a further boom in mobile telephones are in place. In 12 months the number of subscribers has more than doubled, going from 265,965 at the end of 1990 to 567,534 at the end of 1991. And on 20 March this year it reached a level of 625,000, bringing Italy from third to second place behind Great Britain.

Who are the cellular users, the telephone maniacs, the ones on the street, in restaurants, and in other places who inevitably get reached by a call? Sixteen percent are businessmen, 20 percent professionals, 12 percent commercial operators, 9 percent managers, 28 percent independent workers, 10 percent employees, 5 percent others.

These users are also being aimed at by private groups who for some time have been pounding on the doors of the Ministry of Posts and Telecommunications to obtain access to cellular business. The consortiums that are candidates for the role of second operators after SIP are four in number:

- Omnitel, belonging to the extent of 51 percent to Olivetti, 15.6 percent to Bell Atlantic, 14.7 percent to Cellular Communications, 9.7 percent to Swedish Telecom, and 8 percent to Shearson Lehman.
- Unitel, which belongs 40 percent to Fiat, 40 percent to Fininvest (Berlusconi), and 20 percent to Racal.
- Pronto Italia, which belongs 40 percent to Pacific Telesis and 60 percent to Pronto Italia Holding.
- Etra, which belongs 48 percent to ENI [National Hydrocarbons Corporation], 29 percent to Bell South, 12 percent to Premafin (Ligresti), and 11 percent to Millicom Kinnevik.

"The convention with the Ministry of Posts," stated Gamberale yesterday, "is a true contract that is binding on SIP until the year 2004. Our company has invested thousands of billions in mobile telephones, with decade-long amortizations. We must keep this in mind, just as we must protect our stockholders, since SIP has 40 percent floating in the stock market. A contract may be changed, but while safeguarding preexisting interests.

In the opinion of the chief executive of SIP the future belongs to a few large groups operating on a world level, the only ones capable of competing on technology and costs, because product innovations are continual and rapid.

### **ENI, SIP Vie for Cellular Phone Concession**

92WN0134A Rome LA REPUBBLICA in Italian  
18 Mar 92 p 50

[Article by Nino Sunseri: "Red-Hot Cellular Phones"—first paragraph is LA REPUBBLICA introduction]

[Text] Milan—ENI also wants to get into the business and will go to war against SIP with the ETRA consortium. But Agnes argues harshly: "Let oil companies stick to their own business."

War breaks out between IRI [Institute for the Reconstruction of Industry] and ENI over the cellular phone business. Yesterday, the national oil company announced the official birth of ETRA, a consortium comprised of SNAM, AGIP Petroli, and Italgas, and a group of private operators (Permafin, Bellsouth, and Millicom). It proposes to become the second Italian operator in the event that the government were to deregulate the cellular phone business.

The people at IRI, however, were not at all pleased with the venture. From Buenos Aires, Biagio Agnes, the president of STET, the IRI company that handles the strategic sector of telecommunications, thundered against the confusion reigning in Italy. In particular, Agnes denounced "those who make cars or sell gas suddenly deciding to start manufacturing cellular phones, too." Naturally, the reference was to the venture of the ENI group and the Unitel consortium comprised of Fiat, Fininvest, and Recall Telecoms.

At ENI, however, they prefer to keep a low profile and not respond to the attacks made by their IRI cousins. They explain that ETRA is a company whose majority ownership is private, since Permafin of the Ligresti group (with 12 percent), Bellsouth (with 29 percent), and the Swedish Millicom (11 percent) will hold the controlling share of the stock.

### **Three Companies of National Oil Corporation in Minority**

The three companies of the national oil corporation will hold only a 48-percent share, and this share could even

decrease. If ETRA is actually authorized, it will certainly be listed on the Milan stock exchange.

However, it would be hard to imagine SIP stepping aside. At a conference in Turin on Monday night, Vito Gamberale, director of the national telephone company, was clear enough: "We are not against a second operator, just as long as it includes Italian companies and involves the participation of SIP." In other words, SIP does not at all want to leave this market and will do everything necessary to defend the leadership it has gained.

On the other hand, it could not be otherwise, because it is a big business (estimates indicate about 8 trillion [lire]) that is in continual expansion. In fact, up to now, 700,000 cellular phones have been sold in Italy, and 1.2 million are projected by 1994. SIP's government license expires in the year 2004, and before it allows other players onto the field, it will defend itself tooth and nail.

The only problem is that, all over Europe, monopolies are breaking up, giving rise to a multitude of competitors. In Italy, a number of prominent names have already declared their readiness to take part in this contest, such as the pair-up of Fiat and Fininvest, Olivetti with Bell Atlantic, and the Pronto Italia consortium, to which the Americans of Pacific Telesis belong, together with Barilla, Francesco Micheli, and the Varasi group.

Now ENI joins the battle with an abundant show of men and means. In fact, it can rely on its alliance with Bellsouth, the largest of the seven sisters created in 1984 by the breakup of the AT&T monopoly. Bellsouth leads the telecommunications companies in the United States in sales, profits, and market share.

It is the leader in mobile radiotelephony, with more than a million subscribers. Now it has decided to enter the Italian market, allying itself with another worldwide operator such as Millicom International, which is a joint venture between the U.S. Millicom and the Swedish Kinnevik.

### **Operation Control**

The control of the operation is entrusted to ENI. In order to bury the hatchet in the battle against its IRI cousins, ENI explained that it had been working at this venture for quite some time and that it had taken care to inform in a timely fashion all the protagonists, without ever meeting with any specific objections.

In addition, on 5 August, the president of ENI, Gabriele Cagliari, had sent a letter advising the Post Office minister, Vizzini.

ENI has brought in three jewels of its group: SNAM, Italgas, and AGIP Petroli. SNAM already has experience in the telecommunications field, since it owns the second

(after SIP) Italian integrated system, which it set up to operate its own network of methane and oil pipelines. According to its managers it therefore has the know-how needed to run a business like mobile telephony.

Then there is AGIP Petroli, head of 11,000 gasoline distributors all over Italy who could become a distribution network for the new business. Finally, there is Italgas, whose experience would be useful to manage customer billing. Then, to complete the picture of the ETRA consortium, there is Premafin, owned by Salvatore Ligresti, whose contribution would primarily be of a financial nature.

#### **Philips Italia Presents HD-MAC Laser Disc System**

92MI0243Z Milan *ITALIA OGGI* in Italian 31 Jan 92  
p 14

[Text] A child is seated near a brightly colored pool; he is holding a book where the letters are clearly visible.

These demonstrational images are making their debut on television, but their brightness is nothing like the images on the television screen at home. Using this naturalistic document, the managers of Philips Italia presented the HD-MAC [high-definition multiplexed analog component] laser disc system at their Monza plant yesterday. With revenues of 2.0869 trillion lire, 1,050 employees, and 1.3 million television sets manufactured in 1990, more than 50 percent of all Italian production, Philips Italia's new disc (18 minutes per side) will be the ideal means to transmit programs in high definition, before transmission by TF-1, TV-SAT, and Olympus satellites begins.

"This is one of the first steps," stated Giulio Zanmarchi, technical director of the EC's EUREKA [European Research Coordination Agency] '95 project. Supported by 12 study groups, the French company Thomson, and us, D2-MAC [Definition 2 MAC] was chosen as the standard for high definition broadcasting. "The first chance outside of research laboratories to enjoy the results of the HD-MAC will be the Winter Olympics in Albertville. At RAI [Italian Broadcasting Corporation] centers in Milan, Rome, Naples, and Turin, Alberto Tomba's downhill descent will be filmed live with 1,250-line TV images instead of the 625 in use until now. This will be repeated at the Barcelona games. "All using a logic that is the complete opposite of the Japanese logic," stated Philips managers, "that does not want HD-MAC technology to be compatible with current standards, such as PAL SECAM." D2-MAC in a 625-line format is already widespread. Zanmarchi continued, "Apart from its compatibility, the effectiveness of Philips' HD-MAC lies in the 100 Hz frequency it uses. Images are more stable and the typical flickering of the television sets of the last generation is eliminated."

These advances in technology are clearing the way for digital television, which, according to the experts, will become available in the first decade of the 21st century.

Instead, plans are to have HD-MAC on the European market between 1994 and 1995 at an average cost of 5.5 million lire. Its components will be manufactured in-house: from chips to printed circuits.

And what about the public that has PAL SECAM, the system used today? The solution is to apply a simple, economical converter to the television set. D2-MAC however, is already being used in various countries but is considered somewhat expensive: 7 million lire. This has led to some problems. In fact, according to some, technology comes out with new systems with a wide range of choices and prices. The buyer spends a large sum of money to keep up with the times and then may find himself with an outdated standard. "Nothing to worry about," stated Zanmarchi. "PAL-SECAM will survive for at least 15 years, and so will D2-MAC. And the further ahead we go, the more prices will fall." This also depends on HD-MAC's market penetration, reported to be 5 percent during its first years of existence. But the pessimism of the Japanese publication JEI does not leave any way out.

The 500 billion lire Phillips plans to invest in technology (1 trillion lire in all) will cost the public about 300 billion lire. This is the cost necessary for broadcasters to equip themselves with the new high-definition systems.

### **NETHERLANDS**

#### **Government Subsidizes 15 Communications Projects**

92BR0210Z Rijswijk *POLYTECHNISCH WEEKBLAD*  
in Dutch 16 Jan 92 p 3

[Article by Gerard van Nifterik: "11 Million Guilders for Data Communications Projects"]

[Text] Last week, Minister of Economic Affairs Andriessen announced 15 pilot projects in the area of "telematics" [computerized] communications which are eligible for subsidies. These programs, which will receive 11 million Dutch guilders in 1992, are to lead to the breakthrough of data communications in our society.

If Minister Andriessen were to have it his way, telematics would become the largest business sector in the Netherlands—a kind of crossroads combining such sectors as economics, communications, information technology, and many others. Supermarkets, store chains, medical insurance companies, live stock traders, and even the Dutch railroad service (NS) are all jostling to flood our society with smart cards. However, this cannot be done in an instant. Obviously the development and implementation of these chip card ideas requires money. According to Andriessen, a financial injection is needed to get out of the chicken and egg situation; in other words, a situation where users are waiting for sufficient applications while services suppliers are waiting for sufficient users.

There is a lot more involved than the advent of smart cards, although this is likely to be the most spectacular application from the consumer point of view. The minister is also providing subsidies for multimedia applications, the protection of information systems, and product data interchange.

As a matter of fact, last week the VOLSKRANT newspaper reported that several projects had already secured funding even before the subsidies were approved. With or without subsidies, the business community would have started the programs in any case. Therefore, the newspaper report argued that government funding was not really needed, whereas, according to Andriessen, it indicated that the right projects had been selected, since they had a sufficiently large potential user base.

#### Surveillance Fee

Undoubtedly, forthcoming telematics developments will fundamentally change social interchanges, and it is not surprising that the government wants to look over the shoulder of the business community. To a certain extent, subsidies would give it the right to claim supervisory control.

However, the development of data communications applications in the Netherlands does not depend only on pilot projects. Following an initiative by IBM, PTT [Post, Telephone, and Telegraph], and Philips, a Telematics Research Center is being set up at the University of Twente. The center has already received government support and several universities will also be involved.

### NORWAY

#### Turkish Armed Forces Consider Alcatel Equipment

92WT0144A Oslo AFTENPOSTEN in Norwegian  
1 Apr 92 p 6

[Article by Gunn Gravdal: "Norway Hopes To Sell Communications Equipment"—first paragraph is editorial introduction]

[Text] Representatives of the Turkish armed forces visited Jorstadmoen yesterday to inspect the Norwegian communications equipment TADCOM. Both the Norwegian army and Norwegian industry hope Turkey will buy equipment and technology from Norway.

The Army Signal Corps at Jorstadmoen fails to understand critics who claim that Turkish representatives should not have been shown the advanced Norwegian defense equipment. Yesterday three representatives of the Turkish high-tech firm Aselsan, Inc., were cordially welcomed to Jorstadmoen. The three have traveled around Europe for several weeks on behalf of the Turkish armed forces. The goal is to find the best communications equipment for Turkey to use.

"We are still at an early stage, but are trying to find the right system for our army. It may well be that Norway has the best equipment. But a possible purchase is far in the future," says Emin Yaykin, who compares the Turkish delegation's work to that of the Norwegian Defense Institute. He hints that the Turks will not decide on a system before 1995.

STK Alcatel, which has developed an advanced communications system in cooperation with the Electric Bureau and the Norwegian army, was also present at Jorstadmoen yesterday.

"We hope, of course, that the Turks choose to buy our equipment and our technology sometime in the future," says Alcatel consultant Bernt Kristiansen. He claims it is not unusual for foreigners to come to Norway to see a demonstration of communications equipment. Kristiansen believes that Norway's mobile communications system is among the most advanced in Europe. One advantage is that the system takes up very little space.

"Earlier, we've sold technology to Spain and Switzerland," says engineer Bernt Mathisen.

The demonstration at Jorstadmoen provoked a strong reaction because of the unsettled situation in Turkey and because it was just a week ago that the Foreign Affairs Ministry halted the export of Raufoss ammunition to Turkey.

### PORTUGAL

#### Details on Future PO-SAT1 Satellite Launch

92WT0146B Lisbon O JORNAL in Portuguese  
27 Mar 92 p 20

[Article by A.R.: "Portuguese Satellite Improves Communications With Portuguese-Speaking African Countries"]

[Text] When the Ariane rocket is sent into space in 1993, it will carry on its back the first Portuguese satellite to be launched, which will orbit the earth. It will be called the PO-SAT1 and will weigh 45 kg.

Developed by a consortium that includes the National Industrial Engineering and Technology Laboratory (LNETI), Marconi, Alcatel Portugal, EFACEC, Defense Industries, the IST [Higher Technical Institute], the University of Beira Interior, and CEDINTEC [Center for Technological Development and Innovation], the satellite will be built using domestic technology exclusively.

The budget for the construction of the PO-SAT1 is 750,000 contos (plus 50,000 contos for the launch). Of this sum, 30 percent (225,000 contos) will go to fund the training of experts—an indication of the limited scientific resources available in our country.

This project will bring Portugal major dividends. In addition to the operations of the PO-SAT1 in orbit, which will make it possible to improve telecommunications among the Portuguese-speaking countries, the technology used to develop this satellite project will help the Portuguese telecommunications industry to acquire sufficient "know-how" to build further satellites. Seven satellites will suffice for the establishment of a telecommunications network, of which the PO-SAT1 may prove to be the "father."

This project, moreover, has been designed above all as a scientific experiment. With what is learned from the PO-SAT1 project, it will be possible to initiate the Portuguese space program, leading to Portugal's future entry into the European Space Agency (ESA).

The first step in the Portuguese approach to this European space project will be the signing of a contract with Arianespace in a 6 April ceremony at the Ministry of Industry and Energy.

#### The Tanegashima Hypothesis

But, before the Ariane possibility for the launching of the Portuguese satellite emerged, Japan was the option proposed by the individuals directly involved in the project.

The Discoveries Commission supported the idea and the belief that the launching of the PO-SAT1 could be utilized to commemorate the 450th anniversary of the arrival of the Portuguese in Tanegashima.

Commander Soeiro de Brito, the deputy coordinator of the Discoveries Commission, went so far as to discuss the matter with the Japanese. However, the possibility that Portugal might eventually join ESA made the use of the Ariane a better choice, and the Tanegashima hypothesis was abandoned.

Described as a "flyweight" or light satellite, the PO-SAT1 will not be used for telecommunications purposes alone. Portuguese scientists will prepare it for a scientific experiment—a study of the influence of the atmosphere on the dissemination of light waves.

This experiment, designed by the LNETI, will seek to determine the deviations in the dissemination of light caused by the atmosphere. This is important for the study of the diffusion of pollutants in the air.

The satellite, which will be launched at the angle of 63 degrees required for optimal communications among the Portuguese-speaking countries, is to remain in orbit at a distance of 1,300 kilometers from the earth.

### TURKEY

#### TRT Eurasian Television Telecasts via Intelsat VF-7

NC2204154592 Istanbul GUNAYDIN in Turkish  
9 Apr 92 p 7

[From Adnan Zenturk's column: "Eurasian Television"]

[Excerpts] Reports on Turkey's social and cultural developments were telecast to a gigantic area stretching from the shores of the Atlantic Ocean in the west to the Pacific Ocean in the east and from North Africa to the Indian Ocean in the south on 1 April.

This was no April Fools' Day joke. The "miracle" was realized by the Turkish Radio and Television Network [TRT], which is a state establishment, and TRT Deputy Director General Sedat Orsel, who has had long and significant experience working with the network, at a time when private television channels screening several U.S. series and arabesque movies are widespread in the country.

The TRT "Eurasian" channel, which appeared on Intelsat VF-7 over the Indian Ocean on 1 April, will telecast its programs to the Turks in Europe and the Balkan region and to North Africa, the Caucasus, Central Asia, Iran, and Pakistan. With 69 hours of telecasting to 200 million Turkic peoples in a region which stretches from the Atlantic to the Pacific Oceans, Eurasian Television will become the largest international television network with the highest number of viewers after CNN. [passage omitted]

Several TRT teams have been carrying out technical work, in particular in Azerbaijan, Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan, and Tajikistan since January 1992. Turkey has paid for and set up the ground stations. One of the two channels which Russia uses to relay its programs to these republics was used to transmit TRT's signal to hundreds of millions of Turkic people.

TRT's Eurasian channel will begin its regular transmissions in the middle of May. Once the channel is operational, millions of Turkic people, who have eagerly awaited information from the Western world for 70 years, will have access to the latest developments in Turkey and elsewhere. [passage omitted]

Our Iranian neighbors appear to have been uneasy about Turkey broadening its sphere of influence. According to an analysis by our colleague Yusuf Kanli, who writes in the *TURKISH DAILY NEWS*, the Iranian officials, unable to determine the nature of Turkey's telecasts and considering the situation of the Turkic people in Iran, conveyed an "official" message to Turkey on 27 March, asking "Why has Turkey felt the need to telecast to such an enormous region?"

Eurasian Television will reflect Turkey's true image. It will be Turkey's third major project after the Southern Anatolia project and the tourism project in Belek, which will be the most important tourism center in the world.

The Turks in Anatolia (regardless of negative reports) are working to realize several projects toward the end of the 20th century, projects which are regarded as among the most important for mankind. Surmounting obstacles is easy for a country which takes gigantic steps toward development.

**TV Link With Turkic States Detailed***NC1704100292 Ankara TURKISH DAILY NEWS  
in English 8 Apr 92 p 2*

[Report by Yusuf Kanli]

[Text] Ankara—Without much publicity, the state-owned Turkish Radio and Television Corporation (TRT) started broadcasting on April 1 test signals to TV Reception Only (TVRO) devices erected in six Turkic republics of Central Asia and Caucasus.

It was not an April Fools Day joke, but rather the start of an ambitious project that aims on the one hand to foster cultural ties with Ankara's long-lost cousins along the ancient Silk Road and on the other, to serve as Central Asia's window to the world.

The project, known as Avrasya, will be the second largest satellite TV channel in terms of viewers, after CNN. It will reach over 200 million Turks from Asia to Europe.

Sedat Orsel, the deputy general manager of TRT who heads the Avrasya project, says the infrastructure of the project has been completed in less than 45 days—much to the surprise of other countries. Turkish technicians have installed earth stations (TVROs) in Azerbaijan, Turkmenistan, Tajikistan, Uzbekistan, Kazakhstan and Kyrgyzstan. They will receive signals from Turkey via the Intelsat V F-7 satellite above the Indian Ocean. Orsel says the entire cost of the Avrasya project was borne by Turkey.

"No additional expenditure will be made by those republics. All they will do is to allocate an existing domestic channel for Avrasya. And, since each of those republics have dozens of domestic channels, they will simply allocate a few hours on an existing channel for Avrasya," Orsel says.

The TRT plans to go live in mid-May with the new service. "All these people are so hungry for information from the West and Turkey. It will be a tremendous event," Orsel says, adding that the channel will not only provide information to the republics from Turkey and the West, but will also send information from the republics to Turkey and the West.

"This is a two way channel. For the beginning, we shall beam all the programs from the Ankara Golbasi facilities. But, as time goes by and adequate infrastructure is established in those countries, programs will start to be beamed from there as well." Avrasya hopes to reach millions of viewers in a crescent stretching from the ethnic battlefields of Nagorno-Karabakh to sleepy desert towns across the Caspian Sea and yet millions more in Turkey and in Europe.

The current TV-5 (TRT International) channel of TRT will be incorporated with the Avrasya project. All of Europe and some parts of North Africa will receive the Avrasya-incorporated TRT International through the Eutelsat II F-4 satellite. "There will be 69 hours of

Turkish-language news and entertainment a week, as well as late-night Turkish broadcasts from Europe which will last until five in the morning," Orsel says.

He says Avrasya will cater solely to the republics between 15:00 and 19:00 (Turkish local time) during weekdays, and from 09:00 and 18:00 hours during the weekends. During the weekdays from 19:00 to 05:00 hours and on weekends from 18:00 to 05:00 hours both the republics and European countries will receive Avrasya.

Orsel denies speculation that Ankara sees television as a key weapon in an undeclared contest with Iran for influence in the fledgling republics.

"Why should we be in a contest with Iran for influence in these republics? They are our brethren. They want to develop ties with Turkey.... [ellipsis as published] And, we are extending them a helping hand. This is no contest."

Just before TRT started test broadcasts of the Avrasya channel, Iran applied on March 27 to the Turkish Foreign Ministry for an explanation on "why Ankara decided to extend its broadcasts to the Turkic republics of Central Asia?" The Iranian concern stemmed from the fact that they were not aware of what type of programs would be broadcast.

Orsel has a large vision for Avrasya. He says the channel will help the Turkish culture and language prosper.

"Everyone thinks that we have lots to offer to those republics and everyone tends to ignore that there are things that those republics can offer us."

He says that instead of borrowing words from the West, or from Persian or Arab languages, Turks of Central Asia, and indeed Anatolia itself, will soon discover that they have a very rich language with "original Turkish words" to describe everything. He says Avrasya will run Latin-alphabet subtitles during four hours of broadcasting on weekdays and nine hours on Saturday and Sunday.

"The people of those republics will see how something in their dialect is spelled and written in Anatolian Turkish and Anatolian people will see how something pronounced in the dialects used by the peoples of those republics is written in Latin. It's a two way street. We shall learn from them and they shall learn from us. Thus, a richer language and culture will develop." Orsel says there will be special programs on culture, arts, music and literature in those republics.

"We will get to know each other and rediscover our common roots," he says.

**Voice of Germany Joins Satellite Race**

TRT is not the only network expanding its range, the Voice of Germany also started early this month beaming transmissions via satellite across the world.



The six-hour daily TV broadcasts by Deutsche Welle, familiar to shortwave radio listeners as the "Voice of Germany," will broadcast in German and English, with Spanish scheduled for this autumn.

"An information-oriented, competitive foreign TV will contribute to raising the international standing of Germany," Deutsche Welle spokesman Wilhelm Noebel was quoted by agencies as saying.

Pioneered by the U.S. Cable News Network, or CNN, satellite news now includes the Voice of America and the British Broadcasting Corp. Australia is considering beaming government-owned Australian Broadcasting Corp. to Southeast Asia. Religious-backed programming already pops up on cable systems across the world.

The initial Deutsche Welle "footprint," where a home dish will pick up the signal, is from the Canary Islands to Moscow and from Israel to Scandinavia. Deutsche Welle said. Turkey's Avrasya, however, will be relayed via the local TV systems in the Soviet republics and the public will not need to buy home dishes. Britain's BBC World Service, for decades a global radio presence, moved into satellite-delivered television in April 1991 in Europe and last November in Hong Kong.

While CNN and BBC World Service TV are available only at a price, the Voice of America and Deutsche Welle offer their programs free to cable operators or to local stations.

VOA television is relayed on several satellites, making it available in virtually the entire world with everything from language lessons to sports and entertainment.

## UNITED KINGDOM

### Research Center Develops Small Satellites

92WT0140Z London THE DAILY TELEGRAPH  
in English 21 Mar 92 p 6

[Article by Christine McGourty]

[Text] The world's first cheap space satellites, intended to test new technology and carry out small-scale experiments, could be built at Surrey University, it was announced yesterday.

The university's Centre for Satellite Engineering Research has pioneered the development of small satellites that cost as little as £1 million.

Several of its "dustbin-sized" satellites have been sent into orbit aboard French launchers, said Prof Barry Evans, the centre's director.

In a building inaugurated by the Queen yesterday, it plans to build a new generation on a larger scale for a wider range of applications.

These so-called "mini-satellites" will be the size of a small car compared to conventional satellites which are the size of a London bus, said Prof Evans.

They would cost about £10 million, compared to about £50 million for today's large satellites. The first one is expected to be launched in two years after research into how to stabilise satellites of this size.

Researchers at the centre have developed technology that could allow constellations of small satellites to replace very large satellites in orbit around the equator for mobile communications.

NTIS  
ATTN: PROCESS 103

2

5285 PORT ROYAL RD  
SPRINGFIELD VA

22161

This is a U.S. Government publication. Its contents in no way represent the policies, views, or attitudes of the U.S. Government. Users of this publication may cite FBIS or JPRS provided they do so in a manner clearly identifying them as the secondary source.

Foreign Broadcast Information Service (FBIS) and Joint Publications Research Service (JPRS) publications contain political, military, economic, environmental, and sociological news, commentary, and other information, as well as scientific and technical data and reports. All information has been obtained from foreign radio and television broadcasts, news agency transmissions, newspapers, books, and periodicals. Items generally are processed from the first or best available sources. It should not be inferred that they have been disseminated only in the medium, in the language, or to the area indicated. Items from foreign language sources are translated; those from English-language sources are transcribed. Except for excluding certain diacritics, FBIS renders personal names and place-names in accordance with the romanization systems approved for U.S. Government publications by the U.S. Board of Geographic Names.

Headlines, editorial reports, and material enclosed in brackets [ ] are supplied by FBIS/JPRS. Processing indicators such as [Text] or [Excerpts] in the first line of each item indicate how the information was processed from the original. Unfamiliar names rendered phonetically are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear from the original source but have been supplied as appropriate to the context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by the source. Passages in boldface or italics are as published.

#### SUBSCRIPTION/PROCUREMENT INFORMATION

The FBIS DAILY REPORT contains current news and information and is published Monday through Friday in eight volumes: China, East Europe, Central Eurasia, East Asia, Near East & South Asia, Sub-Saharan Africa, Latin America, and West Europe. Supplements to the DAILY REPORTs may also be available periodically and will be distributed to regular DAILY REPORT subscribers. JPRS publications, which include approximately 50 regional, worldwide, and topical reports, generally contain less time-sensitive information and are published periodically.

Current DAILY REPORTs and JPRS publications are listed in *Government Reports Announcements* issued semimonthly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 and the *Monthly Catalog of U.S. Government Publications* issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The public may subscribe to either hardcover or microfiche versions of the DAILY REPORTs and JPRS publications through NTIS at the above address or by calling (703) 487-4630. Subscription rates will be

provided by NTIS upon request. Subscriptions are available outside the United States from NTIS or appointed foreign dealers. New subscribers should expect a 30-day delay in receipt of the first issue.

U.S. Government offices may obtain subscriptions to the DAILY REPORTs or JPRS publications (hardcover or microfiche) at no charge through their sponsoring organizations. For additional information or assistance, call FBIS, (202) 338-6735, or write to P.O. Box 2604, Washington, D.C. 20013. Department of Defense consumers are required to submit requests through appropriate command validation channels to DIA, RTS-2C, Washington, D.C. 20301. (Telephone: (202) 373-3771, Autovon: 243-3771.)

Back issues or single copies of the DAILY REPORTs and JPRS publications are not available. Both the DAILY REPORTs and the JPRS publications are on file for public reference at the Library of Congress and at many Federal Depository Libraries. Reference copies may also be seen at many public and university libraries throughout the United States.